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FANTASTIC FILMS

The Magazine of Fantasy & Science Fiction in the Cinema™

AUGUST, 1978

SPECTACULAR
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ISSUE



INTERVIEWS
WITH:

DOUGLAS TRUMBULL
JOHN DYKSTRA

(INCLUDING GALACTICA PHOTOS)
R2D2 (KENNY BAKER)
SUSAN SACKETT

ALSO!

THE WEAPONS OF STAR WARS
EXCLUSIVE STAR TREK II PHOTOS
ALIEN LANGUAGES OF STAR WARS TRANSLATED





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Contents

4

REACTION planetary missives

6

DOUGLAS TRUMBULL the definitive interview with the outspoken engineer/wizard of cinematic special effects INTERVIEW by James Delson



28

INTERVIEW WITH SUSAN SACKETT gene roddenberry's secretary tells almost all (with star trek ii photos) by Jeff Maynard

30

MAKING IT an interstellar itinerary of inexpensive items you can transform into miniature models SPECIAL EFFECTS by Clyde Jones and Verne Anderson



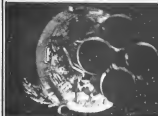
22

THE UFO MENACE truth is often stranger SPECULATION by Woody Allen



54

A SHORT CONVERSATION WITH KENNY BAKER r2d2 speaks out INTERVIEW by Jim Sulski



45

JOHN DYKSTRA the master of (industrial) light and magic speaks of star wars and galactica INTERVIEW by James Burns

48

THE ALIEN LANGUAGES OF STAR WARS TRANSLATED from jawa to bocce LINGUISTIC ANALYSIS by Taura Le Marbe

57

THE WEAPONS OF STAR WARS the ballistics of world wars i and ii can be seen in that galaxy far far away WEAPONRY by Clude Jones and John Penn

62

FAN SCENE elison, spfx, godzilla and more

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THE REEVES RIDDLE

In your June 1978 issue of *Fantastic Films*, which was devoted to the Superman story, I read Irv Karchmar's article about George Reeves and was impressed that others felt the way I do.

George Reeves was sacrificed because of a role he never really appreciated. For four years now I have been doing some light research into Reeves and found that he was much more of an actor than I realized.

But mostly I have been doing research into the suicide(?) of Reeves. It is my theory that Reeves was murdered and did not commit suicide. I share my theory with Reeves' late



mother who, after her son's death, hired criminal lawyer Jerry Giesler to investigate his strange death.

On June 16, 1959 when he committed suicide, George Reeves was with his friends, Leonore Lemmon, who he planned to marry later that week, heard a gunshot and went to an upstairs bedroom and found the nude body of Reeves with a bullet in his temple. Later it was found in the will that Reeves gave most of his \$50,000 estate to Toni Mannix, the wife of Eddie Mannix, the former general manager of MGM. Mrs. Reeves (Bessolo) believed until her death in 1964 that her son had been murdered.

One single aspect that you mentioned was that Reeves may have been taking pain killers with alcohol—that is okay but one problem is that Reeves was allergic to alcoholic beverages. Another thing is that Reeves' sport jacket was bloodied under the bed. Could Reeves have undressed

after he was shot? NO, he was dead instantly after the bullet was fired and the coat was far away, so no blood could have drained on to it.

It's a big mystery to me but I think there is more to the story than revealed.

Paul Hendricks
DuBois, Pennsylvania

BEYOND SUPERLATIVES

Your magazine is just beyond superlatives. I bought the bookstore's last two copies for my cousin and myself. I can't tell you how thrilling it is to find this fine publication which meets my interest in these 'Fantastic Films' so completely. I was stunned by your articles on the superclassic *The Day The Earth Stood Still*, and absolutely fascinated by the one on the linguistics of the film.

The photos were ample and deliciously, colorfully clear. All the articles convey a warm respect for the reader's intellect and imagination. Of all the wonderful new color magazines to probe the profound and stimulating world of fantasy-SF cinema, yours seems to be the most vibrant yet.

I am looking forward to articles and photos touching on such further classics as the ever-ultimate 2001: *A Space Odyssey*, *The Time Machine*, *Kronos*, *Invasion of the Saucer Men*, *Forbidden Planet*, and an endless list of others which are so endearing to we people of the evermoving tides of the imagination.

Michael Elchert
Lima, Ohio

CONGRATS

Your magazine is #1 on my list! Take three curtain calls on the magnificent article by Irv Karchmar! Beautiful! Also, congrats are in order for the interview with Dr. J. Allen Hynek. I had no idea he had a center for UFO studies. It's nice to know that someone cares about the possibility of extraterrestrials visiting us.

Heywood Tate, USN
San Diego, California

POOR EXCUSES

With all the really poor excuses for SF magazines coming out now, it's good to see that there are still a few people putting around out there who can write decent articles on the subject. I liked the articles on *The Day The Earth Stood Still* immensely. I still think that has to be the greatest SF film of all time. Including that article also proves to me that the editorial



staff isn't just a bunch of kids hung on *Star Wars* (a great film, but please remember that there are others we can talk about too).

Anyway . . . I wish you best of luck. I hope to see more articles of the caliber of those in your first issue.

Kim Blekis
East Lansing, Michigan

DAD LIKES IT

I liked your magazine very much. This is the first issue I bought but I'm planning on buying more. Even my dad likes it and he doesn't even like sci fi stuff.

Kirk Thrasher
Clyde, Ohio

EQUALS

I was very impressed with *Fantastic Films*. Every one of the articles were very good. I especially enjoyed the interview with Rick Baker. I think that *Fantastic Films* is just about equal to *Starlog*.

I have very few criticisms. First, the name doesn't catch my interest. It sounds, well, like some of the cheap sci-fi magazines you see. The cover is a bit crowded, also.

Cathi McGaha
LaPorte, Indiana

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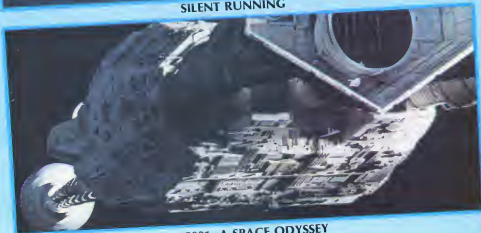




CLOSE ENCOUNTERS OF THE THIRD KIND



SILENT RUNNING



2001: A SPACE ODYSSEY

A Definitive Interview
with the Outspoken

Douglas Trumbull

Engineer/Wizard of
Cinematic Special Effects

by JAMES DELSON

"STAR WARS was offered to me and I turned it down because I was tired of making Space Operas ..."

Douglas Trumbull really needs no introduction. He is the leading director/designer of special effects in film today. Since his debut in 1964 with a twenty-minute short titled *To the Moon and Beyond*, he has led the field, breaking new ground with each succeeding project. Like the *Midas Touch*, his name on a film guarantees its technical integrity and enhances its boxoffice potential. His best known works are 2001: A Space Odyssey, *Silent Running* and *Close Encounters of the Third Kind*, but he has also contributed to a series of ABC Television commercials, *Eastern Airlines*, "The Wings of Man" commercials, the title sequence from *Candy*, and *The Andromeda Strain*. Contributing Editor James Delson first met Doug Trumbull in 1972, prior to the release of *Silent Running*. Five years later, just before *Close Encounters* came out, he interviewed him again, catching up on his activities since '72, and measuring the contribution he made to CE3K. He begins, of course, at the beginning, with Trumbull's early aspirations.

PRE-ODYSSEY

FF: Were you interested in space and space travel at an early age?

TRUMBULL: I didn't know what the heck I was going to be up to when I got out of high school. I was interested in architecture and studied it at El Camino Junior College. In less than a year I was hooked on the art aspect of it and completely dropped the academic curriculum. I tried the Art Center School in L.A., but it was just totally unsatisfactory. I had become a pretty competent illustrator, but I wanted all the paintings to move. I wanted something to happen. The idea hit me to try animation. I went to every cartoon studio in Hollywood and they all told me I was out of my mind. I finally picked up a job at Graphic Films, a place that was specializing in space. I had done some science fiction book-cover-type paintings, landscapes, ships and

stuff. They really liked that, 'cause they were working on a lot of films for N.A.S.A.

FF: Did you have any interest in filmmaking at that time?

TRUMBULL: I didn't really know, but once I was working there I started getting interested in it. Without quite knowing what to do I built an animation stand out in my garage, this giant wooden thing with a Bolex camera

mounted on it. Building it was the fun part, 'cause by the time I'd shot my first little scene with it, I realized it was already outdated. I worked for Graphic for about three years, and became very familiar with fuel space mechanics and rocket engines and all that.

FF: The first film you made was *To the Moon and Beyond*. It was shown by IBM at the 1964-65 New York World's Fair. How did it come about?

TRUMBULL: I don't really know how the whole thing got instigated. It was set up by Cinerama, and we worked directly with them at the start using a process called Cinerama 360. It's a fisheye photography process where you also project with a fisheye lens into a dome, like a planetarium. It uses 70mm film, but the picture is spherical. We had to build special camera equipment and special projectors and the film ran at a special frame rate of eighteen frames a second instead of twenty-four, because the film would just rip up.





2001: A SPACE ODYSSEY One of the problems

FF: How did this film lead to 2001? Was it influential in Kubrick's decision to do his film?

TRUMBULL: He had already started 2001, but he brought us in after he saw our film. What we'd done was essentially a trip from the infinitely large to the infinitely small. It progressed all the way from the birth of the universe, on a galactic scale, right down through a galaxy, to the sun, to the earth, on the surface of the earth, then down, through molecules and atoms and ended on a giant white snowflake. Kubrick must have liked all our multiple exposure stars and traveling through galaxies and stuff, 'cause he decided that Tom Pederson, who directed it, and I were the ones to go to work on 2001.

FF: When you started making 2001 was there much question of what Kubrick was trying to do?

TRUMBULL: I wish I had a copy of the original screenplay that I saw when I started working on the picture, so you could see what a piece of crap it was. It was a funny screenplay, because it

had lots of blank pages in it, and at the top of each of those pages it would just say, "Special effects sequence starts here. Work is now under way with our crew of artists and technicians to produce the most fantastic visual effects ever made." Just that above a big blank page. The whole thing was a big snow job that Kubrick did on MGM to get the production under way.

FF: He had to convince them that he could do those fantastic effects?

TRUMBULL: He did convince them. He rented some space in a corset factory somewhere in New York and they set up this thing. He found some character who'd developed this crazy little technique of putting drops of enamel or laquer paint onto water and filming it as it spread out. They would dye water black, like black sky, then drop a little paint in it. The camera would have to be very close with a real big blow-up lens, a macro 35 Nikkor, and he shot a bunch of this stuff with a 70mm camera. They shot all these big explosions, weirdo velocity stuff.

There's some of it in the film. He used a reel of it to convince MGM that they were going to see some super duper things in the movie, and that's how it all got rolling. Nevertheless, the script was just dumb, really bad in a lot of ways.

FF: Wasn't he working with Arthur C. Clarke on the storyline?

TRUMBULL: Kubrick was going off in his own direction and they finally had a falling out. Clarke had his own concept of what the story was going to be and was into writing it into his novelization. So Arthur did his book end Stanley did the movie. But, it was interesting the way it all developed, because just like in *Silent Running*, things were constantly being spontaneously generated that weren't in the script. You could just see things happening. The whole thing of the computer taking over the ship and killing the guys wasn't in the original story at all.

FF: What was the original story?

TRUMBULL: The original story was just the basic sentinel thing. The

The "Discovery" was shaped like a ball on a rod,

Below, Bowman maneuvers to antenna system. A full-scale set was used, the main dish being about twelve feet in diameter. On opposite page (bottom), the spermatozoa-like *Discovery* is seen from rear with its nuclear reactor engines.





The 700-foot-long spaceship *Discovery* (opposite page, top) was a 54 foot model with a six-foot in diameter command module. Above, a satellite orbits the Earth (the backlit Earth was photographed on an animation stand, the satellite was a still photograph shot on a large horizontal camera).

In 2001 was the simple design of the space ship...

Dawn of Man in Africa. A lot of ape-type vegetarian characters are dying off in a big drought. There's nothing but a few weeds and stuff left, but there are still a few animals. The only way they're going to survive is to learn to kill the animals. This big thing (Trumbull does an outer space special effects sound of a craft landing) comes down in the middle of the night. There's a lot of rustling around, and when they get up in the morning there's a transparent cube right by the watering hole where they go every morning. They lick the cube and taste it and everything, but don't get what's going on. All of sudden the cube goes (makes outer space sound again) and it shows a movie, a big, holographic teaching film. It shows bones on the ground, and shows them how to pick up a bone and how to clonk an animal until he's dead, and then how to eat him. It was a training film, but it was too literal and cinematically problematical. The script kept going off into more and more nebulous implications rather than the strict concrete

ones. That was changed to the more simplistic version used in the film.

FF: The monolith was a transparent cube in the original script?

TRUMBULL: On Earth, yes, but the first concept of finding the monolith on the moon was to have it as a tetrahedron, like a pyramid-shaped thing. It gets triggered to go off as soon as the sun's rays hit it.

FF: And it led to following the radio signal to Jupiter? That part stayed the same?

TRUMBULL: Well, for a while it was Saturn, but nobody could paint Saturn right.

FF: Aha! Little did they know that *Silent Running* was just around the corner. Saturn did not get passed up in vain.

TRUMBULL: You liked our Saturn?

FF: Excellent use of rings.

TRUMBULL: Anyway, they get to Jupiter and the other crew members are revived. Now you've got five guys on board the ship. The two guys go out in pods and find this big slot, a big rectangular hole in one of Jupiter's

moons. They look down in the hole and it seems to go on to infinity, but there are stars on the other end. The hole would have been angled so that Jupiter would be right behind it, but you wouldn't see Jupiter. The planet's right behind the hole but you see another star system out through it. They say, "Oh groovy, time warp," or something like that. They drop a lot of little probes down it and send rockets down it which disappear, accelerate off and read out a bunch of weird things. Finally one guy goes down in there to see what's up. He lands on a weird planet and starts wandering around. His buddy comes down and lands with him. They start moving around and . . . I can't remember the thing, it was so bizarre. They fall through holes in the ground and end up in a cavern, and then in the strange room. They're both in the strange room and then a door opens and then this giant twenty foot tall green man comes out.

FF: Is this for real?

TRUMBULL: Sure. Kubrick spent a

so it looked exactly the same from all angles.



lot of time trying to make these big tall green men. They sort of went off in all directions, from rubber monsters to all kinds of other things, trying to do extra-terrestrials. I went into Stanley's office one day and said, "Listen, if this movie's going to end with one or two guys in this room, you've left too many loose ends. You've still got the other guys out there in the space ship. What are they doing? Where are the pods? What's going on outside of this room? You've gotta clean it up. Wouldn't it be better if you just had one man, and wouldn't it be better if something went wrong back at the ship. Why not kill all those guys?" He looked at me and said, "Trumbull, don't come in here with any assinine ideas like that." It turned up in the script a month later. Fine. Maybe he thought of it himself or something. It was a constant juggle on the film. He wrote dialogue every day before they would shoot.

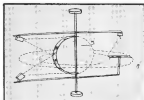
FF: What were your feelings during the filming of all 2001? "No one's going to understand this." "Why the hell are we doing this?" "How can we spend another million?" Or was it a giggle?

TRUMBULL: Well, in a sense it was always a giggle 'cause we had unlimited time and unlimited money to fool around and have a good time, but there was lots of behind the scenes grumbling. In many ways Kubrick's really hard to work for because he wants to totally run everything. He has to see absolutely everything you're doing, he has to understand everything that's going on, and he'll be the one to say yes or no. He's in total control all the time, and that bugs a lot of people who want to do their own thing.

FF: The best example I've heard of Kubrick's "individuality" is the story of the fake zebra on the "Dawn of

Man" sequence. That whole sequence was shot on a sound stage in England using front projection. Not too many dead zebras in England.

TRUMBULL: Oh that was funny. It wasn't in the script, but Stanley wanted this scene with some kind of predatory animal eating a dead zebra at night. He might've been able to get a zebra, but not a dead one. Nobody was going to kill one just for the film. I said, "How about a dead horse? We'll paint it to look like a zebra." He said, "Fine, but I don't want anybody to go kill a horse for me, either." They postponed the shooting of that scene and found a horse that was going to die any minute. They waited for it to die,



Douglas Trumbull's drawing of his streak photography technique for the filming of Saturn.

and when it finally croaked they dragged it off to the studio where it was painted to look like a zebra. Unfortunately, the shooting schedule got all fouled up and they couldn't shoot it right away. So there was this dead horse which got really foul 'cause it laid around about a week before they shot the scene. That was really something.

FF: I heard they had to drug and chain the leopard to the dead horse so it wouldn't run away from the smell.

TRUMBULL: With all the animals they had there, the place smelled like hell.

FF: You designed the Jupiter star gate and found fame and fortune with slit

scan photography. But you also "created" the planet itself for 2001, much like Saturn in *Silent Running*.

TRUMBULL: I painted a flat painting of textured clouds and stuff, and then I shot a circular color transparency of it. I cut it in half and put half the transparency in one projector, and half the transparency in the other. I had a rotating mechanism inside the projector with a very, very thin strip a sixteenth of an inch wide attached to it. As the whole thing rotated over a period of about two hours, the projectors rotated their pictures as well. We shot that picture with a very, very slowly moving focal plane shutter and it emerged in a spherical form, in perfect perspective. And there just isn't any artist in all of England that could do that, and paint it properly. I just made a crude painting, but by applying it so perfectly to a sphere, it looked absolutely, totally real.

FF: Until the film started drawing massive publicity, no one knew about so many of the scenes being done indoors.

TRUMBULL: This was something we couldn't stage, completely, because the set that we built encompassed the entire stage. There was no way to get a source of light to do it. We just faked it all with locked-off camera angles from up in the ceiling. It was shot right around Christmas of 1965.

FF: The footage was held undeveloped for a couple of years so the effects could be added?

TRUMBULL: They were held for nearly a year before we got around to making the plaster model, which wasn't much bigger than a coffee table. We put the plaster model exposure onto the original negative. We tried to put as many multiple-exposure shots as possible onto the original negative. We held undeveloped takes to fit them into the model.



Top part of photograph is coffee-table size plaster model, matted over indoor set of monolith site.



The photos above are: top, Poole and Bowman in Ferris wheel-like Centrifuge set; middle, Moon bus cockpit approaching site of monolith (terrain was photographed later and matted in); bottom, Poole and Bowman in soundproof pod discuss HAL's erratic behavior without realizing HAL is reading their lips.

The photos above are: top, interior of Discovery command module with Poole in commander's couch; middle, Poole entering pod bay; bottom, Poole and Bowman in pod bay (two pods had operational doors and mocked-up interiors. Separate pod set was built with full instrumentation).



At top left, a cut out photo of the Moon bus with rear projection action in windows. At top right, the Arius descends into the Astrodon. Above, Clavius base airlock with Arius IB after landing (e set about fifteen feet deep; Arius was about two feet in diameter).

2001: A SPACE ODYSSEY

Pictured above is the opening title shot against the background of a nuclear weapons satellite orbiting the Earth at sunrise.

A rare frontal shot of the Moon bus (below) seen from above.



The space station wheels (above) rotate slowly on their axle in the film's beginning.

Below, an EVA pod retrieves Poole's lifeless body.



FF: When you finished 2007 you came back to the United States and set up a private commercial house and did the Eastern Airlines "Wings of Man" commercial and a number of slit scan things for ABC.

TRUMBULL: Yes, I did a lot of stuff for ABC, Monday Night Movie, Tuesday Night Movie, Wednesday Night Movie, all those titles. Big, flat planes with things floating through them. A lot of that was trick photography, a lot was computer controlled, and some was manual.

FF: Did you go from that directly into Candy?

FF: (hesitantly) Candy was one of the

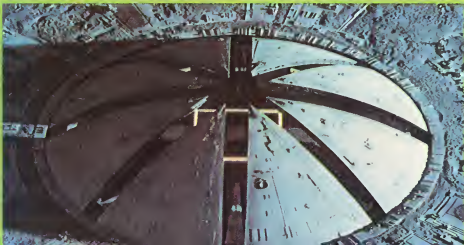
Bowman (Keir Dullea, above) travels through the dimensional time-gate which is reflected on his helmet. It was filmed via slit-scan photography.

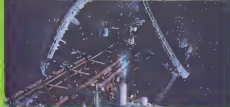
The Astrodome opens (below) to allow Aries to land. The model was ten feet in diameter with eight three-foot-long, pie shaped panels that withdrew. The lights of the square landing platform are made up of extra-brilliant tiny bulbs from West Germany.

first jobs I got when I came back. It was about a \$25,000 job to do those title effects and these weird, nebulous things floating down.

FF: You can skip right over that.

TRUMBULL: Yes, I don't think it was important. The big embarrassment about Candy was that the optical dupes of all the stuff I shot were just so bad and so grainy and contrasting that it was all just ruined in the lab and so I just never talk about it. But there were two or three shots that I did for the Candy titles that I think are some of the most beautiful space shots ever done. I'm sorry they can't be pulled off the original negative because they were really super.





The Valley Forge looking forward toward the green-house pods. Interior of the Valley Forge (below) was actually the Navy aircraft carrier Ticonderoga, modified by implementing modular units.



A close-up of one the "arbor" pods shows the incredible detail which typifies Trumbull's miniatures.

Huey stands on the catwalk of the Valley Forge.



SILENT RUNNING

FF: As I understand it, the final screen version of *Silent Running* was very different from the original story. The ecology aspect was a minor issue, and there was more of a relationship between the Lowell character and the drones.

TRUMBULL: I wanted to elaborate the story of that relationship, showing how the machines changed from simply doing their job to their anthropomorphization into real characters. I wanted to show what a dead end it is but also what a wonderful thing it is because of the output of emotion. That story involved contact with an extraterrestrial life force. It



Lowell (Bruce Dern, above) is on the verge of a nervous breakdown from all that has transpired, and will soon activate the atomic destruct mechanism.

The Valley Forge approaches the rings of Saturn (below). Trumbull originated the streak photography technique used in creating the rings (see sketch on page 10) while creating the planet Jupiter for 2001: A Space Odyssey.

was the basic story of some ET's who are traveling around and who detect this guy who's totally alone, totally isolated. He'd be the guy to make contact with. Here's a guy out alone. He likes being alone. He likes that job. He's totally alone in the ship with his little robots whom he has no relationship with at all. He's getting a little bit old for the space program and he gets the kiss off from the company. They say, "You're being retired with congratulations and everything. All your space transportation from now on is completely free on the company and we're really glad you've done such a good job for us." He says, "But I don't want to go back. I like it out here



alone. I don't want to go back to Earth. I just want to be left alone." Here he is with a big old clunky space freighter that is going to be decommissioned anyway. It's a big piece of shit and he says, "Well, I've always sort of wanted to go out exploring." He decides to steal the ship and he enlists the help of the drones. He reprograms them to help him out and respond to him. They tear out all the communications equipment, throw it out into space, paint the whole ship totally black so no one can see it jet off. He's constantly threatened by the fact that he could be pursued, that the authorities will be out looking for him. He's a space pirate, and he's having the time of his life. Still at this time it doesn't have anything to do with the cargo or the trees or anything at all. He sees a little blip on the radar screen which is the only thing he's kept functioning.

He sees something approaching his ship, and figuring the only safe way is to stay out of sight, he goes into the silent running mode. He turns off all the lights, all the electricity, anything that emits any kind of detectable emission. The ship's all black and everything. He tries to be absolutely cool and not make a noise and not do anything. No light, all black. And he just waits and this blip gets closer over the period of a week he's sitting there watching it and he's sort of cracking up, watching this radar scanner. The air is getting really foul and the oxygen is getting really thin because he hasn't got the air conditioners on, and finally just before it gets there he passes out. Then there's this really neat sequence that happens.


It's all seen just from his room. He's in the control room. He's all alone, completely conked out. He's in that room and it's dark and you just hear this big clunk of two ships coming together. Then you hear the air lock open and footsteps going down the

weak signal. He tunes it all in and he's super adjusting it, increasing the gain and everything, and finally he gets a picture from the drone and it's a view of our own galaxy receding away from the point of view of another ship that's got some weirdo shape. He starts talking to the drone. "Find a hatchway. Get inside the ship. Find out what the ship is like." He's making the first contact with extraterrestrial beings by remote control. The drone hustles around and finally finds a door and gets inside. He's really getting close. The drone is inside. Then there's another blip on his radar screen and he realizes it's the cops. The rest of the film is a big race against time for him to try to make contact before the cops break in. They're saying, "Come out you god-damned space pirate." He won't come out. He's got the door bolted and everything. On the ET ship the drone is getting closer and closer and finally it goes to the right room and opens the door. You see some really weirdo, super electric man, or something really super duper—that was one thing I did on 2001 that never got used. I developed some really neat extraterrestrials—he sees the ET and just at that moment, just as he's finally made that contact, the door to his room just goes Whammo! This cop comes in and wipes out the whole room with a big flame thrower and he's instantly incinerated. The camera cuts to the drone. It's just sitting there, not knowing what to do, confronted with these extraterrestrials. The drone just takes his little arm and reaches inside his little body and pulls out a little photograph that he's carried around with him. It's a picture in which the hero posed with the three drones, like a little family portrait. The drone holds the photo up to these extraterrestrials and the movie ends like that.

FF: When and how did the original idea come up for *Silent Running*?

TRUMBULL: When I was in London, working on 2001, I saw Tod Browning's *Freaks*. There was this fantastic little guy who was zonked in half at the navel. He could walk really fast on his hands, and he was agile and terrific. I said, "Boy, put him in a robot suit and nobody'll figure it out."

Around the beginning of 1970 I met Mike Gruskoff. He said, "Come up with a story and maybe I can sell it for you." I worked out a short story and we made a deal with Universal Pictures.



"Whammo! This cop comes in and wipes out the whole room with a big flame-thrower and he's instantly incinerated!"

hallway. You hear things going by. You hear someone turning the knob of the door. It's all dark and the camera is just cruising around. By this time with all the things turned off the ship's in a weightless condition. There are books and junk floating through the room and you just sort of see shadows moving. You go back out and the door shuts and the electricity comes back on, and he wakes up a few minutes later with fresh air and everything. The ET's are gone. He looks around and finds all the places where they pried doors open. He sees all the manifestations that some weird being was on his ship and had saved him by turning the oxygen and stuff back on for him. Finally he realizes that one of his drones is gone. The drones are constantly transmitting television pictures to the three little screens in the control room. He figures that by setting up a little impromptu tracking system he can find out where the drone's signal is coming from. He sets up his antenna and gets this little,

THE "VALLEY FORGE"

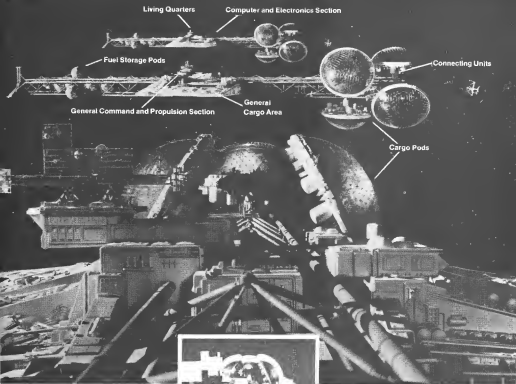


DIAGRAM OF MATTE SEPARATIONS

FF: Was it your intention to make your outer space and space ships more interesting than Kubrick's?

TRUMBULL: That was one of the things I was trying to solve photographically in *Silent Running*. One of the problems in 2001 was the simple design of the space ship. The "Discovery" was shaped like a ball on a rod, so it looked exactly the same from every angle. There just isn't much you can do with a shape like that, so it became dull, you know? I wanted to go with a looser shape where I could get a lot of different kinds of angles, shoot through things, open it up more, get more dynamic perspective going on. FF: Were the spaceships built from multiple exposures?

TRUMBULL: The model for the ship was 26 feet long. From the side there was no focus problem, but from the

rear it was impossible. We shot it section-by-section, photographing only as much as we could keep in focus each time. It worked out that each shot was actually a composite of four different photographs. One foreground, one medium ground, one distant and one back-ground. So that we could carry the depth of field. I never framed the shot so I could see a lot of out-of-focus crap.

FF: Could you explain some of the workings of your *Silent Running* spaceship? Was the Command Center one separate area and the rest of the ship for cargo?

TRUMBULL: The way I roughly interpret it, the center section represented the general command and propulsion sections of the ship, the electronics, living quarters and the cargo area where all the little modules were stacked, the kind of cargo that's necessary to the life support of the crew. The pods in the rear are for fuel; all detachable or multipliable. The domes are on these connecting units, only one connector holding each dome to the ship. In terms of design we were constantly working with modular systems. The idea was that as a cargo ship it wouldn't necessarily be carrying domes, it would just be carrying big pods containing any kind of cargo. In this particular case they were domes and they fit in clusters around the ship. The whole structure is a modular space frame that could



Dern at the controls. The basic consoles were left intact, but modified and redesigned to conform with the original layout of the carrier as much as possible.



Freeman Lowell (Bruce Dern) speeds around the cargo deck in one of the interior transports. The center of gravity and steering were specifically customized to skid on the metal floor.

be expanded to any length by simply adding more units.

FF: When you said these were fuel pods, was it then operating on fuel other than nuclear power?

TRUMBULL: Well, nuclear power requires some kind of fuel, too; or, it may have been fuel or those may just have been cooling liquids or any other number of things. I just didn't feel it was important to go into those problems. It doesn't have anything to do with the story you're telling. You're just expending screen time. I didn't want a Charles Eames peddled wall, or something, in front of the air ducts and wiring looms and stuff. It suddenly hit me that all the naval ships I'd ever seen in old John Wayne movies and stuff had all these exposed ducts and wires and stuff. I'd never actually seen one, but I figured it must be like that, so I immediately got permission from the Navy to go look at the Ticonderoga, an aircraft carrier that was in port at the time. We went through on a tour and it was just terrific. I said, "Wow if we just changed the right things; take off the clunky looking things that are obviously naval, re-shape the doors which were obviously naval, we could really make this thing look super." It had all the guts of the junction boxes and tubes and ducts and stuff that I wanted to use. After a big hassle with the Navy and the Department of Defense in Washington we got permission to rent the aircraft carrier for \$10,000 a month and we used it for three months. We went into the main control rooms and redesigned them, leaving all the basic walls and consoles and stuff, just putting in more sophisticated looking equipment, flashy looking displays and stuff. It was all just redesigns of the real thing. We tried to hold to the layout of the ship as closely as we could.

FF: Had you designed the robots before writing the script?

TRUMBULL: We started designing them once we were in the carrier. We

tried to give them the same feeling as the clunky stuff on the carrier: big bolts and fasteners all around. They look like, you know, if they were standing against the wall they'd just be a junction box or something.

FF: Yeah, or a radio.

TRUMBULL: Yeah. There was a funny thing. We'd sent some stills out to *Time* Magazine and neglected to caption them. They called Universal and said, "Hey, I got some pictures here from *Silent Running* and I want to know what they are," and the guy at Universal said, "Well, what is it?" And she said, "Well, there's some guy here talking to two refrigerators." We knew what she was talking about.

FF: How did you rework other areas of the carrier?

TRUMBULL: The space which we used for our cargo area was, in fact, the hangar deck where they used to store the airplanes. The walls were just vacuum formed plastic, tacked onto plywood.

FF: The little cars looked like fun.

TRUMBULL: We designed and built them with the center of gravity and steering specifically customized for the ship's metal floor, which had skid characteristics that were totally different from dirt, grass, concrete or anything. We made these little cars so they would skid around inside this environment.

FF: Was the whole design "look" of your film a reaction to 2001?

TRUMBULL: Yes, I was trying to improve on the space ship design thing so that it was more cinematic. 2001 was all faked, the design was too much an art director's kind of thing and not enough of the real bare bones kind of technology. On *Silent Running* I worked with a lot of really young guys who were all super professional industrial designers up on all of the latest techniques of modularization systems, geodesic structures, and space frame structures. That's why the movie is so filled with hexagonal units and funny interlock-

ing things. We got very heavily into the real possibilities and feasibility of different kinds of space frame design, much more believable and feasible than the art director look in 2001.

FF: The sequences with the drones were believable and yet still in the realm of fantasy. When Dern is re-programming them and one of the drones taps its foot as if it were bored, it goes over to fantasy, but at the same time, the act of re-programming seems very realistic.

TRUMBULL: Fact or fantasy? I had gone the year before to some big technical convention where they had microscopes set up so people could look at little integrated circuits. They're just fantastically beautiful little things. The overlay levels and colors and everything. One of the things I wanted to show was the beauty of the technology. Technology has a beauty of its own, because of the way it has to be. If you look at a lunar excursion module, or at a ranger satellite, they're just fantastic, beautiful things because they're not art-directed. It's not a painting or anything. It's just that it had to be that way because of the requirements to satisfy the purpose. To me, those things have a natural beauty because of the way they just spontaneously came out. It's the same beauty that a flower





Dern (with eyeshade) gets ready for a hand of poker. Note the pool table in background; there was to be a Lowell vs. drone pool game, but the mechanical problems were too difficult.



Botanist Freeman Lowell teaches two of the drones to care for his plants. This scene replaced the pool game.

or a plant has too, a beautiful kind of natural symmetry. It has something to do with the structure of the universe. The jewel-like quality of these integrated circuits, their patterns and such, are just great. Much better than 99% of the abstract paintings you'll see. It's a mood of inevitability.

FF: I liked the fact that you still gave everything a used look. The drones have seen quite a lot of service, and the ship interior appears to have been on active service for some time. In addition, the visual beauty of the machinery, especially the drones, is offset by very unmechanical behavior. When they play poker the drones compare hands, and in other scenes they're quite human.

TRUMBULL: Well, we did little things, but that's a part of the spontaneous things that happened in the movie. We would just be sitting there, shooting a closeup on the drone's arm, and we spent a lot of money to make it do what it did, and it could rotate, twist, and do all kinds of things. I just said, "OK, we're going to do a little close-up on the drone and just make the arm do everything it'll do, and we'll just use cuts of it, intercut with the other action." We realized it suddenly could flip around, which wasn't in

the script, and then cut to the other drone who twists a little bit.

When you set up that situation, with the machinery and everything, there are wonderful, spontaneous things that happen, that tend to have meaning, but don't necessarily have meaning. And there were situations like that all the time. We had this scene where they were waiting for Bruce to come in, and I noticed that they were side by side facing forward and they can't see each other. When they want to talk, they're banging on each other, they have to talk without being able to see, so they're just clunking each other. When we set up the card game where he programs the drones to play cards and everything the point is that they don't get it. He couldn't articulate or program all the aspects of a poker game. What was in the script, and what we intended to do was this: he says, "Okay, screw the card game. It's just impossible." He decides to play billiards with them with the machine. That's why we built that big heavy edge all around the pool table. The drones were supposed to stand on it to make their shots. They got all these tools built into their systems so they could play.

It turned out that technically it was a fantastically complicated thing to shoot. It would have taken two or three days to shoot it. We just didn't have the time or the money to do it. There was no way we could go over schedule. We decided to eliminate the scene and terminate the concept of the pool game. Later on, Bruce and I wrote the tree-planting sequence to replace the pool game. It was to show the same thing. The limitations of the drones as far as being completely able to handle things they weren't properly programmed to do. The point was that the drone wouldn't get a lot of aspects of the poker game, but

a billiard game involves strict mechanical precision, logical progressions which they would understand perfectly. The way the scene was written, he sets them up and starts telling them the basic rules of the game. They've got to shoot the ball in the hole. So the first thing they do is shoot the ball directly into the hole, perfectly, but right into the hole without benefit of cue ball. So he says, "No, you've gotta shoot the white ball against the other ball and then hit the bank and then go into the hole." They say groovy and start doing these big double and triple bank shots, real hustler shots. He really gets into it, and then he just turns on the automatic machine which also plays against them. He's just pitted one machine against another, all capable of fantastic mechanical precision.

The whole thing just turns into a screaming mechanical nightmare because he hadn't programmed completely. They just walk right out onto the table and start shooting between each other's legs and everything. It would have been one of the all-time funniest scenes but it was too much of a nightmare to shoot. Later on, when we were getting into the problems Bruce was having with coping with being all alone, like what the hell was he going to do, we set up the scene with him and the machine. He's just sitting there waiting for the machine to rack up the pool balls. I set that up and we ran the machine particularly slow, 'cause it can just whip around and do things real fast when you turn it up, I mean it could kill you. It's not intended for pool, it's an automatic pre-programmable manipulator that they use on automobile production lines to do automatic spot welding and put things into big million-ton presses. I'll put that thing into the press and wait while this big machine slams down on it. It doesn't have the human reaction of flinching, so it's more efficient. So we ran it particularly slow while it racked up the pool



Douglas Trumbull sets up a scene with Bruce Dern in the cargo hold of the Valley Forge (actually the hanger deck of the Navy aircraft carrier Ticonderoga).

balls. Now this thing has a lot of torque. It's gotta be anchored in the floor or it'll rip the whole floor out. The idea that came up, which was, again, not in the script, was that he could have racked up the poolballs in half the time and done a perfectly good job of it without using \$250,000 worth of machinery, and at the same time tell about his boredom and everything else. That one little scene encapsulates a lot of the things I was trying to say there, in that part of the picture.

FF: Were the drone's feet mechanical or battery operated or something, or were they actually walking on their hands inside those things?

TRUMBULL: They're walking on their hands inside, yeah.

FF: And then when they stopped, they could take their hands out and...

TRUMBULL: No. Their hands were in that all the time. This was operated remotely. It ended up, in the movie, most of the time we had a little pneumatic hose coming out from behind the drone, with a guy offstage with a million little knobs making this all work. For some of the first shooting,

where Bruce runs over the drone and operates on him and everything, aside from the little story that that tells, that's just designed to confuse didn't put a face on it, we didn't put a head on it. We didn't put shoulders on it, we tried to just totally defy the shape of the guy inside. The scene, you because you're convinced that inside it's something terrific, and then you open it up and it's just a bunch of nuts and bolts.

FF: Did you debate at one time using wheels or treads or anything to make the drones move, as opposed to having hands?

TRUMBULL: Oh yeah. I mean we went through everything you could think of. We actually did some experiments with roller skates on the bottom like a skateboard kind of thing.

FF: Did you do this because it was more human?

TRUMBULL: All the robots that have



Each of the three droid robots from *Silent Running* developed an almost human personality within the story. They became characters we cared about, and grieved for when they were injured or "died."

been done to date are two-armed, two-legged, anthropomorphic things. I wanted to do the opposite kind of thing but still have the liveliness of real motion.

FF: Let's talk about the patches. One of the quietest scenes in the film is where Bruce sews a patch onto his suit commemorating his run through the rings of Saturn.

TRUMBULL: You're the only person who's ever mentioned that. I think that's one of the most touching little scenes. Nobody ever reacts to it. Nobody's ever mentioned it. Here's the guy, ya know? Here's Mr. Average American Joe Schmuck who's gone from the East Coast to the West Coast with all these decals on the back window of his woody station wagon. It's exactly the same kind of "Americana Guy." When you look at Bruce's

patches you can see all the different mountains he's climbed, Smokey the Bear, and patches that we made specifically that represented each of the different domes he'd had on the ship. I have a shirt with a lot of the patches sewn onto it at home.

FF: How did you create Saturn?

TRUMBULL: It was the same technique that I ultimately used on 2001 for Jupiter. It's a streak photography technique. If you were photographing car headlights or taillights at night with the shutter open for a long period of time on a time exposure, those create a streak of light. Well, what we did was make a semi-circular strip of wood, a strip of wood that was mounted on a pole, on ball bearings on the floor and the ceiling. I had another long pole out here and another long pole out here with a little projector unit on it. And this is projecting out from the equator right down to the bottom, then there were bands of color, just different colors all the way around here, right? Now, over here I had a flat panel, with another projector projecting some bands of color on

"... I wanted to do the opposite kind of thing, but still have the liveliness of real motion."

it. Just air-brushed, painted color. These things were all connected together. Now the thing is, you just go into a totally dark room, and the only thing that's lit is this semi-circular line and that flat line and the whole thing rotates around to where it completes the circle, and this goes around here. It creates that scanned exposure, so you accumulate a total exposure.

FF: How did Saturn differ from Jupiter?

TRUMBULL: I didn't have all the money to build these mechanized projectors with motors and stuff in them on *Silent Running*. This was a simpler technique. I actually had to create Saturn in two exposures. I did one exposure for the center, and then one exposure for the rings, which actually overlapped. I made big color prints and cut 'em apart and stripped 'em together and then air brushed shadows onto the rings for the phase of the lighting at that moment, that time of day. I'd do a matched set. One planet and one ring and then superimpose 'em on each other. So the rings went around behind. I did a lot of the painting and the artwork. (See page 10)

"All robots done to date are two-armed, two legged, anthropomorphic things ..."

we had to do a real quickie redesign. You can see the difference in the movie. If you look very closely at the arm in the scene where the drone walks up to him and he's fallen on the floor. That was run by a radio control, and that was one of the first things we shot there. And it was a complete failure because the radio control worked terrible until we got under the carrier.

You know these big bulkheads and all the shit that was going on at the naval base and everything, the radio control just completely malfunctioned. We redesigned the whole thing for remote manual control with a bunch of levers and stuff, like you'd operate a crane or anything else. We couldn't find anything on the market that would do what we wanted, and all of this kind of stuff, I mean that really served a purpose and everything but we were constantly trying to confuse the audience, you know. So it was the one arm coming out of the center instead of two arms on the side. Every effect, every effort was made to de-anthropomorphize the robots. We knew there was a guy inside, but we

STAR WARS

versus

CLOSE ENCOUNTERS

FF: Science fiction went through a pretty dry period between *Silent Running* and *Star Wars*.

TRUMBULL: Before the success of *Star Wars* there was a general reluctance to do science fiction or projects that were technically complicated. It was an uphill battle to get our kind of pictures made. Even George Lucas had an uphill battle, although he had the slightly more fortunate situation than I of having done *American Graffiti*. Since that was enormously successful, he had one leg up and got *Star Wars* made. Now that *Star Wars* exists and has become the biggest grossing motion picture of all time everybody is turning their head around and realizing that they shouldn't look down on science fiction as a low-grade art form. So, I think there's going to be some big changes. There's obviously going to be a glut of some real low quality jobs because there aren't enough good people to go around to make these projects.

"STAR WARS is fun and is very successful because it adheres to the principle that . . .

FF: Do you feel the same thing was thought by the makers of *Star Wars*?

TRUMBULL: *Star Wars* is fun and is very successful because it adheres to the principle that no one ever went broke underestimating the intelligence of the American public. Intellectually, *Star Wars* is really low grade, at the very bottom.

FF: I don't know that I agree with you on that. There's a great sense of innocent wonder to it.

TRUMBULL: I'm not denigrating *Star Wars*. I think I understand what it is, and I think George Lucas was absolutely brilliant in knowing what he wanted to achieve, knowing the mood and the flavor, because he struggled through that film for years with no one fully understanding what the final mood was going to be. That's very hard. I had a hard time on *Silent Running* with people thinking, "Well this is just another grade B science fiction junker," and not taking it very seriously. It's always hard, so I really commend George Lucas in having made *Star Wars*. He's done a lot for me and a lot for the whole medium of science fiction, because taking that

whole fantasy approach broke the traditional movie-business view of science fiction films. Before *Star Wars*, the supposedly intelligent intellectuals who were running movie studios thought of SPACE as nothing, a bunch of empty space. Their view was, "there's nothing happening out there. It's boring. It's nothing." Suddenly George Lucas comes along and says, "Uh uh, fellows, it's populated with all these crazy people, and there's stuff flying all over the place and there's wars and struggles." Suddenly they saw the universe filled with action. *Close Encounters* says the same thing. It says, "There is mind boggling stuff out there. Let's not have our heads in the sand." That's what science fiction and fantasy and going beyond the norm has to offer. **FF:** *Close Encounters* is going to be compared to the other science fiction films that have made the last ten years



R2D2 also was a droid with a distinct personality. Like Huey, Dewey and Louie from *Silent Running*, the audience was shocked when they thought he was destroyed in the final dogfight.

for many film goers. Starting with your IBM film and *Space Odyssey* and going through several television commercials, *Silent Running* and now *CE3K*, you've created a body of work, a yardstick against which all science fiction films are now compared. Do you find you have to top yourself in each succeeding film?

TRUMBULL: Well, yeah, you always want to top yourself. I always do. Topping yourself is more a matter of diverting your interests and doing something new each time. In that way you top yourself even though you can't top yourself in terms of the money the movie made. I think for topping myself, I like to simply do something that's a different challenge. That's why I did *Close Encounters* and not *Star Wars*. *Star Wars* was offered to me and I turned it down

because I was tired of making space operas. I've had plenty of space ships and stars. John Dykstra, who had worked with me and had done all the model work in *Silent Running*, did *Star Wars*. It was a great opportunity for him to split out and make it on his own, and he was very, very successful at it. It's interesting that we all keep in very close touch, Dykstra's group and Industrial Light Magic and my company, Future General. We're all friends and we trade personnel, ideas and equipment back and forth, making a lot of rapid advances. There's a lot of common equipment concepts and electronic control systems in *Star Wars* and *Close Encounters*.

FF: I understand where *Star Wars* was coming from and I could see a lot of the special effects and pick them apart, but in this film, my mouth was open. When the little ships came in I was thinking, "What are they doing?" And then when the big ship comes in the whole audience caught its breath. 2,000 people went, "Ahh" which must be a lovely feeling for you.

TRUMBULL: Yeah, it's nice. Talk

... no one ever went broke underestimating the intelligence of the American Public."

about topping yourself, that's really what we were trying to do in *Close Encounters*. You see a little bit and then you see a little bit more and then everybody says, "Well that must be it," and then you see a little bit more and you say, "Oh that must be it," then you see the mother ship and everybody gets blown out. That was really fun, building and building and building. It was very effective.

FF: Was the song "When You Wish Upon A Star" in the original screenplay? It was cut in the release print.

TRUMBULL: The concept in the original screenplay had the movie ending with "When You Wish Upon A Star." The song was over the end titles, and it read beautifully in the script. But once the film was dubbed and the music was being laid in it started to feel uneasy because by that time the film had built to such a dramatic pitch that it was much too serious; it was better than we expected it to be and the song was actually a notch down from that and it sort of became ludicrous. There was something about it that remained attractive, but something about it troubled us. We did



Two saucers zoom over the lonely Indiana highway, catching the awestruck Jillian and Barry (top) and Roy Neary (above) in their lights.

previews in Dallas on two different nights, once with the song and once without, totally recut endings

FF: Those were the screenings that several critics sneaked into to beat the review dates on the film

TRUMBULL: It created a big flap because the film was also changed a lot after the Dallas previews. That's the whole purpose of a preview. You're looking at a film with new eyes when you're with an audience. Sort of in spite of what the audience felt, because they liked the movie both nights, we all felt that the song was wrong. It's crazy that *Time Magazine* which went so far as to break into the screening room, review the film and say the song wasn't any good when our intention was not to leave the song in.



FF: Did the tinkerbelle motif come out of the song?

TRUMBULL: Well, the tinkerbelle thing grew out of "When You Wish Upon A Star" and a whole Disney kind of thing. Very late in the film, less than three months before its release, Steven's friend Amy gave him this little

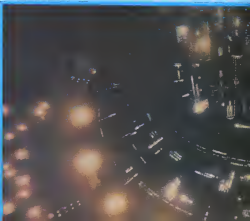
The first of the scout ships soars over the fugitives' hiding place (top left) toward the landing site; seconds later, they hover above Lecombe, who looks expectantly at the communications scoreboard (bottom left). The mothership is seen in detail (center), glowing like an oil refinery at night.

The third saucer flies over the astounded observers (top), while later in the film, expectant picnickers see lights which turn out to be helicopters (above).

tinkerbelle music box that played "When You Wish Upon A Star" and had little Jimmy Cricket sitting on the top. It sort of tied in with the music at the end, so Steven reshoot some inserts of that with the electric train set to sort of tie it in.

FF: There was more Disney stuff out as well?

TRUMBULL: Yeah. There was a scene at the very beginning of the film where Dreyfuss is trying to talk his kids into going out and seeing *Pinnocchio*. Spielberg is sort of living out a lot of his childhood stuff through Dreyfuss, but unfortunately that scene is not in, so most of the integrated Disney ideas including "When You Wish Upon A Star" got lost. I think some of the flavor of the idea is still there, but in a fairly diluted form.





At top, a variety of ufos descend upon the landing site. Above, the lights of a scout ship underbelly are seen as it hovers directly overhead.

FF: Well, certainly the little red dot of light that tags along behind the three smaller UFO's is like a Disney kid pulling up his pants and following the bigger boys in Peter Pan.

TRUMBULL: Yes, that's right, that was the baby.

FF: In doing the special effects for this film, what new techniques did you design and develop?

TRUMBULL: Ever since 2001 I've gotten very involved in light, pure light. Hardware models with louvers and vents and motors on them don't turn me on quite so much as the idea of working with light in a pure form, like the Star Gate scene in 2001. When Spielberg and I talked about the UFO's in *Close Encounters*, we agreed to approach them as objects of light. One of the things this deci-

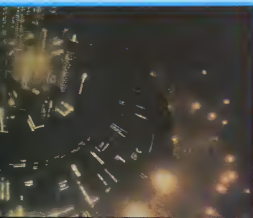


sion offered us and also one of the big challenges and problems it created is that everything had to be very soft, nebulous, indistinct, and colored, but still very tightly tied in with the live action. In order to accomplish this, we had to develop a lot of complicated new matting techniques. These in-

Above, the seemingly gentle alien greets the inhabitants of Earth. Below, in close-up the debarkation platform descends onto the landing strip amid the awed scientists and technicians (top right). At bottom right, the reunited Jillian and Barry watch as Earth prepares to receive its first visitors from the stars.

cluded soft contrast mattes, low contrast mattes, density mattes, and density cover mattes, plus all kinds of combinations of positive and negative soft masks in the optical printer. We used a variety of devices to combine all sorts of lens flares, nebulous, amorphous shapes and glows and other things so that it didn't look like hard-edged hardware. I think we were very successful. It was a big challenge, but I am sure every science fiction bopper and special effects buff knows that when you get into a special effects shot, the camera is locked down so that you can noodle with it and do all your effects and add the multiple elements. We felt that since we were dealing with objects that were moving constantly, we wanted

(Continued on page 25)





UFOs are back in the news, and it is high time we took a serious look at this phenomenon. (Actually, the time is ten past eight, so not only are we a few minutes late but I'm hungry.) Up until now, the entire subject of flying saucers has been mostly associated with kooks or oddballs. Frequently, in fact, observers will admit to being a member of both groups. Still, persistent sightings by responsible individuals have caused the Air Force and the scientific community to reexamine a once skeptical attitude, and the sum of two hundred dollars has now been allocated for a comprehensive study of the phenomenon. The question is: Is anything out there? And if so, do they have ray guns?

All UFOs may not prove to be of

THE UFO MENACE

extraterrestrial origin, but experts do agree that any glowing cigar-shaped aircraft capable of rising straight up at twelve thousand miles per second would require the kind of maintenance and sparkplugs available only on Pluto. If these objects are indeed from another planet, then the civilization that designed them must be millions of years more advanced than our own. Either that or they are very lucky. Professor Leon Speciman postulates a civilization in outer space that is more advanced than ours by approximately fifteen minutes. This, he feels, gives them a great advantage over us since, they needn't rush to get to appointments.

Dr. Brackish Menzies, who works at the Mount Wilson Observatory, or else is under observation at the Mount Wilson Mental Hospital (the latter is not clear), claims that travellers moving at close to the speed of light would require many millions of years to get here, even from the nearest solar system, and, judging from the shows on Broadway, the trip would hardly be worth it. (It is impossible to travel faster than light, and certainly not desirable, as one's hat keeps blowing off.)

Interestingly, according to modern astronomers, space is finite. This is a very comforting thought—particularly for people who can never remember where they have left things. The key factor in thinking about the universe, however, is that it is expand-

*speculation
by
Woody Allen*

ing and will one day break apart and disappear. That is why if the girl in the office down the hall has some good points but perhaps not all the qualities you require it's best to compromise.

The most frequently asked question about the UFOs is: If saucers come from outer space, why have their pilots not attempted to make contact with us, instead of hovering mysteriously over deserted areas? My own theory is that for creatures from another solar system "hovering" may be a socially acceptable mode of relating. It may, indeed, be pleasurable. I myself once hovered over an eighteen-year-old actress for six months and had the best time of my life. It should also be recalled that when we talk of "life" on other planets we are frequently referring to amino acids, which are never very gregarious, even at parties.

Most people tend to think of UFOs as a modern problem, but could they be a phenomenon that man has been aware of for centuries? (To us a cen-

tury seems quite long, particularly if you are holding an I.O.U., but by astronomical standards it is over in a second. For that reason, it is always best to carry a toothbrush and be ready to leave on a moment's notice.) Scholars now tell us that the sighting of unidentified flying objects dates as far back as Biblical times. For instance, there is a passage in the Book of Leviticus that reads, "And an great and silver ball appeared over the Assyrian Armies, and in all of Babylon there was wailing and gnashing of teeth, till the Prophets bade the multitudes get a grip on themselves and shape up."

Was this phenomenon related to one described years later by Parmenides: "Three orange objects did

appear suddenly in the heavens and did circle midtown Athens, hovering over the baths and causing several of our wisest philosophers to grab for towels"? And, again, were those "orange objects" similar to what is described in a recently discovered twelfth-century Saxon-church manuscript: "A lauch laughed he; wer richt laith to weat a cork-held schonne; whilst a red balle lang owre swam aboon. I thank you, ladies and gentlemen?"

This last account was taken by medieval clergy to signify that the world was coming to an end, and there was great disappointment when Monday came and everyone had to go back to work.

Finally, and most convincingly, in 1822 Goethe himself notes a strange celestial phenomenon. "En route home from the Leipzig Anxiety Festival," he wrote, "I was crossing a meadow, when I chanced to look up and saw several fiery red balls suddenly appear in the southern sky. They descended at a great rate of speed and began chasing me. I screamed that I was a genius and consequently could not run very fast, buy my words were wasted. I became enraged and shouted imprecations at them, whereupon they flew away frightened. I related this story to Beethoven, not realizing he had already gone deaf, and he smiled and nodded and said, 'Right.'"

As a general rule, careful on-the-scene investigations disclose that

most "unidentified" flying objects are quite ordinary phenomena, such as weather balloons, meteorites, satellites, and even once a man named Lewis Mandelbaum, who blew off the roof of the World Trade Center. A typical "explained" incident is the one reported by Sir Chester Ramsbottom, on June 5, 1961, in Shropshire: "I was driving along the road at 2 a.m. and saw a cigar-shaped object that seemed to be tracking my car. No matter which way I drove, it stayed with me, turning sharply at right angles. It was a fierce, glowing red, and in spite of twisting and turning the car at high speed I could not lose it. I became alarmed and began sweating. I let out a shriek of terror and apparently fainted, but awoke in a hospital, miraculously unharmed." Upon investigation, experts determined that the "cigar-shaped object" was Sir Chester's nose. Naturally, all his evasive actions could not lose it, since it was attached to his face.

Another explained incident began in late April of 1972, with a report from Major General Curtis Memling, of Andrews Air Force Base. "I was walking across a field one night and suddenly I saw a large silver disc in the sky. It flew over me, not fifty feet above my head, and repeatedly described aerodynamic patterns impossible for any normal aircraft. Suddenly it accelerated and shot away at terrific speed."

Investigators became suspicious when they noticed that General Memling could not describe this incident without giggling. He later admitted he had just come from a showing of the film "War of the Worlds," at the post movie theatre, and "got a very big kick out of it." Ironically, General Memling reported another UFO sighting in 1976, but it was soon discovered that he, too, had become fixated on Sir Chester Ramsbottom's nose—an occurrence that caused consternation in the Air Force and eventually led to General Memling's court-martial.

If most UFO sightings can be satisfactorily explained, what of those few which cannot? Following are some of the most mystifying examples of "unsolved" encounters, the first reported by a Boston man in May, 1966. "I was walking by the beach with my wife. She's not a very attractive woman. Rather overweight. In fact, I was pulling her on a dolly at the time. Suddenly I looked up and saw a huge white saucer that seemed to be descending at great speed. I guess I panicked, because I dropped the rope on my wife's dolly and began running.

The saucer passed directly over my head and I heard an eerie, metallic voice say, 'Call your service.' When I got home, I phoned my answering service and received a message that my brother Ralph had moved and to forward all his mail to Neptune. I never saw him again. My wife suffered a severe breakdown over the incident and now cannot converse without using a hand puppet."

From I.M. Axelbank, of Athens, Georgia, February, 1971: "I am an experienced pilot and was flying my private Cessna from New Mexico to Amarillo, Texas, to bomb some people whose religious persuasion I do not wholly agree with, when I noticed an object flying alongside me. At first I thought it was another plane, until it emitted a green beam of light, forcing my plane to drop eleven thousand feet in four seconds and causing my toupee to snap off my head and tear a two-foot hole in the roof. I repeatedly

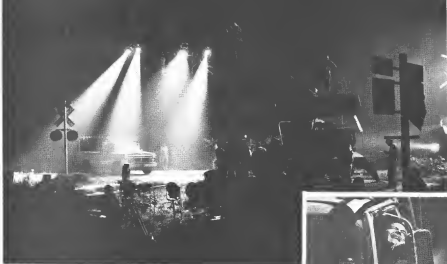
They told me we must learn to live in peace or they would return and laminate every first-born male.

called for help on my radio, but for some reason could only get the old 'Mr. Anthony' program. The UFO came very close to my plane again and then shot away at blinding speed. By this time I had lost my bearings and was forced to make an emergency landing on the turnpike. I continued the trip in the plane on the ground and only got into trouble when I tried to run a toll booth and broke off my wings."

One of the earliest accounts occurred in August, 1975, to a man on Montauk Point, in Long Island: "I was in bed at my beach house, but could not sleep because of some fried chicken in the icebox that I felt entitled to. I waited till my wife dropped off, and tiptoed into the kitchen. I remember looking at the clock. It was precisely four-fifteen. I'm quite certain of this, because our kitchen clock has not worked in twenty-one years and is always at that time. I also noticed that our dog Judas, was acting funny. He was standing up on his hind legs and singing, 'I Enjoy Being a Girl.' Suddenly the room turned bright orange. At first, I thought my wife had caught me eating between meals and set fire to the house. Then I

looked out the window, where to my amazement I saw a gigantic cigar-shaped aircraft hovering just over the treelots in the yard and emitting an orange glow. I stood transfixed for what must have been several hours, though our clock still read four-fifteen, so it was difficult to tell. Finally, a large, mechanical claw extended from the aircraft and snatched the two pieces of chicken from my hand and quickly retreated. The machine then rose and, accelerating at great speed, vanished into the sky. When I reported the incident to the Air Force, they told me that what I had seen was a flock of birds. When I protested, Colonel Quincy Bascomb personally promised that the Air Force would return the two pieces of chicken. To this day, I have only received one piece."

Finally, an account in January, 1977, by two Louisiana factory workers: "Roy and I was cashifying in the bog. I enjoy the bog, as does Roy. We was not drinking, although we had brought with us a gallon of methyl chloride, which we both favor with either a twist of lemon or a small onion. Anyways, at about midnight we looked up and saw a bright-yellow sphere descend into the bog. At first Roy mistook it for a whooping crane and took a shot at it, but I said, 'Roy, that ain't no crane, 'cause it's got no beak.' That's how you can tell a crane. Roy's son Gus has a beak, you know, and thinks he's a crane. Anyways, all of a sudden this door slides open and several creatures emerge. These creatures looked like little portable radios with teeth and short hair. They also had legs, although where the toes usually are they had wheels. The creatures motioned to me to come forward, which I did, and they injected me with a fluid that caused me to smile and act like Bopeep. They spoke with one another in a strange tongue, which sounded like when you back your car over a fat person. They took me aboard the aircraft and gave me what seemed to be a complete physical examination. I went along with it, as I had not had a checkup in two years. By now they had mastered my own language, but they still made simple mistakes like using 'hermeneutics,' when they meant 'heuristic.' They told me they were from another galaxy and were here to tell the earth that we must learn to live in peace or they will return with special weapons and laminate every first-born male. They said they would get the results of my blood test back in a couple of days and if I didn't hear from them I could go ahead and marry Clair." ■



The scene of Dreyfuss's first encounter. The high-intensity lights were mounted on a forklift at an actual railroad crossing. Insert at right shows Dreyfuss shielding his eyes against the glare of the ship passing overhead.



to be able to pan and tilt and dolly and do focus shifts during a lot of the shots. This resulted in one of the other major technical innovations of the project. We built a motion control system, an electronic data control system that was hooked up to the camera's pan, tilt, focus, and dolly track motions. When we were on location, we could shoot a scene that had a hypothetical object in it and do any kind of camera moves we wanted, recording each one precisely.

FF: You took this device on location with you?

TRUMBULL: On location in Mobile, Alabama. We recorded all the pertinent data on standard $\frac{1}{4}$ inch cassettes, including sync marks, slate marks, camera frame rates, and the whole thing. We took the cassettes back to Los Angeles very carefully, so as not to get them erased by an X-ray detection machine in an airport or something. Back in L.A., the machine played back the tapes into the camera equipment during the photography of miniatures. Using this device, we could run the program at single frame rates or any other rate we wanted. In addition, there were all kinds of variable, spatial compression systems so if the model was 1/20 scale we'd dial in "1/20" scale and shoot and lock it together.

What you see in *Close Encounters* are some of the most complicated shots ever attempted. These include some 180 degree pan shots that pan off and on to special effects that are just absolutely there. It's very effective.

FF: In putting together the space craft, did you use model kits in the same way that miniatures were built for *Space Odyssey*, *Silent Running*, and *Star Wars* out of kits?

TRUMBULL: No, not at all. It was all from scratch. There were a few kit parts in the mother ship, but not extensively because it all had to be specially made. The objects were

much more of a new kind of kit that we designed. We made a modular saucer kit, made up of a combination of lighting systems which included neon and fiber optics, quartz-halogen bulbs, and all kinds of special illumination systems, all shot in a fog environment. If you see an airplane approaching an airport with its landing lights on, you see these big shards of light coming out. This is just lighting scattering in the dirt or the moisture in the air. We wanted to be able to create these effects in miniature. So we built a fog room, what we called "the



Trumbull and Spielberg go over the storyboards of *Close Encounters*. Each shot was carefully planned in advance to coordinate with the effect to be added later.



Douglas Trumbull (above) instructs the cameraman while Steven Spielberg (at right, with bullhorn) set up a location scene at Devil's Tower, Wyoming. Below, Trumbull is at the controls of the MTS computer system, with which he can synchronize the special effects of a UFO's movement with the already filmed live action.



smoke room," and used a controlled density smoke, which really does the same thing that normal air does. If we were working at 1/20 scale, for instance, the air had to be 20 times dirtier than normal air in order to see a beam of light. We shot everything in this fog environment, including the mother ship, all the objects and all the lighting effects so that all the beams of light, glows, and all the other glow effects would look totally natural.

FF: For *Close Encounters*, was the timing of the special effects sectionalized? As an example, did you decide you were going to have, in the first half hour of the film, x minutes of effects, y minutes in the next half hour, z minutes in the next half hour, and so forth, to build it up throughout the film?

TRUMBULL: Yes, but the build wasn't quite that specific. The whole idea was that the sequences early in the film would serve as teasers to get everybody sucked into the story, building to this huge payoff in the last 40 minutes of the film. We didn't know exactly how much screen time any of these things would take. As a matter of fact, it took a lot less than we thought because there was no way to predict how fast an object should move to look real or natural, and it all cut very rapidly. But the basic plan was this huge payoff at the end, laid out as a series of cascading peaks. We knew that was going to run about forty minutes and that's about what it came out to be. As a matter of fact, there were a lot more events planned for the ending which we never shot. Some we didn't have time for, others were much too complicated to try to achieve.

FF: How about the look of the vehicles? You seemed to bleed them in slowly, letting the audience see a little bit more every time they appeared.

TRUMBULL: You still never really see very much except a couple of times, like the underbelly shots where you see a little texture or detail or something. The real payoff in our minds in terms of any clarity of what a vehicle was like wasn't to occur until we got to the mother ship. It was really going to be the first hardcore, tangible, touchable thing. I don't think it worked in that respect. We still tried to adhere to a lot of soft light techniques to take the edge off of it, 'cause we never wanted to have that aluminum-skinned, riveted body kind of look. So light always played an important part. That's why the underbelly of the

mother ship was always projected light. There were a lot of techniques we used to keep it moving, fluctuating, and sort of coming and going all the time. Even after the movie ends you get the chance to watch this big thing. You actually get to see it better in the end credits. We tried to plan it so things are constantly improving on themselves. You never have to go back, you never have to go downhill.

FF: How about the look of the ET's? The extraterrestrials

TRUMBULL: That was really based upon as much information as we could put together from Hynek and others as to what people have said about their close encounters of the third kind. They are preponderantly the same world-wide, little short jobs, very thin features, very light, with sort of oversized heads and big eyes. These are constant things that are seen all over the world by different people with different cultures, and at different times. The fact is that there is a kind of consistency, even though some of them range off it a little bit. The fact is that they are preponderantly human, always humanoid. They are never giant caterpillars with fifty legs and giant multi-lensed eyes. That has never been described. It is proven that people's imagination really runs the gamut. If you took the view that extraterrestrials are really figments of people's imaginations, you would come up with the *Fly*, the giant praying mantis, and all kinds of other crazy stuff because the human imagination is capable of all kinds of things. But the actual or recorded sightings seem to have some consistency which tends to make you believe that there is more credibility there. So we tried to create that as closely as we could.

FF: The look of the ET when he and Truffaut are standing and facing each other and he kind of turns his head just slightly, the way a dog kind of wonders at someone, and then the blinking of the eyes. The audience was on the floor for that one.

TRUMBULL: We were very impressed by what Carlo Rambaldi had done for *King Kong* in terms of the facial expressions. That was the high point of the movie to me. We wanted him to go even further than that, which he did. He built the ET with tremendously articulated facial expressions so that we could get that little moment. There are other things going on there which you might not see at first. He has a throat gulp if you're looking for it. His

neck bends and the whole thing was really great.

FF: How many people were there in the team operating the ET?

TRUMBULL: About eight people.

FF: Was it a miniature?

TRUMBULL: He was standing there. **FF:** I heard about one thing which doesn't appear in the film. An ocean liner, stranded, dry, but completely intact, in the middle of a vast stretch of sand dunes in the Gobi Desert. It's just there, like the squadron of planes.

TRUMBULL: It was never shot. We felt that it was inconsistent with the rest of the picture. It was to have been a whole separate sequence in the Gobi Desert somewhere, but it always seemed uncomfortable and inappropriate, and would just raise more questions rather than help solve the questions. We felt that we had to try to answer as many questions as we could and still keep it nebulous.

POST ENCOUNTERS

FF: What are you working on now?

TRUMBULL: I've been spending a lot of my time developing a totally new way to photograph and project motion pictures. It's compatible with current technology, and can be put into certain kinds of existing theaters, so

long as they're architecturally sound. I like spectacle. I've always liked giant screens, Cinerama, or anything that makes it more of an event. I've developed a film process that I'm going to be making my next film in, that I think is going to be a quantum leap in entertainment.

FF: What is your process?

TRUMBULL: Very briefly, it's a high-speed, 70mm film process with multiple channel sound. It's got a screen bigger than Cinerama, new projectors and a reorientation of seating in the theater. It has a sound system that can deliver up to 150 decibels of anything—not just rumbles and low end, stuff like "Sensurround," but a concert quality sound system that can really deliver. It has all kinds of electronic control systems that are operative in the theater, which allows us to do a lot of manipulation of the sound during the screening of the film. It's a totally new concept, and all I can say about the way the film is photographed and projected is that the screen is no longer like a screen, it's like a big window on reality.

If you could have a 3-D holographic movie in your mind's eye, what would you do? What would it change in the way you edited a movie, the way you

framed shots, the way you staged action, the pace at which things could occur, the effect on the audience, how much the audience is participating in that event? This process is much simpler than a 3-D hologram and it's workable now. It has a lot of those effects and it's an experience. We experimented in 2007 with the idea of an audience becoming involved with an experience, a subjective point of view. That's what the whole trip sequence was about. It wasn't a trip for Keir Dullea, it was a trip for the audience.

FF: How about the rings of Saturn in *Silent Running*?

TRUMBULL: That was more of the way movies are ordinarily made. With ordinary movies, the audience is a third person voyeur, watching some other activity. They get involved intellectually or emotionally in some event through the mechanism of the plot, but in order to really, fully experience something as though you were there it has to be a hell of an environmental experience. It has to be huge screen, and it has to be believable, real. The sound has to have sound pressure levels that are close to reality. It has to really get you going. That's what I'm working on. ■



Trumbull and Spielberg discuss a proposed scene over the Oxberry animation stand.

How ex-schoolteacher Susan Sackett came to Hollywood seeking fame and fortune and finally found a little of both through Star Trek

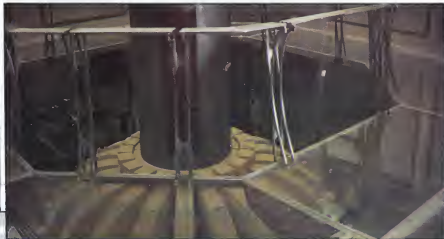


Photo by Gene Roddenberry



The new bridge (above) is four feet larger in diameter and has several doors that the old bridge did not have. The greatest change, however, is in its electronics. It is built into almost every square inch of the external framework, and when a crewmember presses a button it will actually perform a function. On the original set, the function had to be simulated by a technician offstage. The bridge has the same familiar circular look, though each of the stations is more clearly defined. In addition to the extra doors (including one which we must assume is a toilet), there is a large, transparent hemisphere (called a Weapons Defense Center Viewing Screen) which acts as a target mechanism for Chekhov when a combat situation is encountered. There are also two side consoles at the Science Officer's station which can pop out of the lower wall on either side to give him (or her, or it) additional control facilities. The new, three story Engine Room (below) has been revamped totally, with the central reactor core now called a Matter-Antimatter Shaft. The Transporter Room is basically the same except for a more streamlined control panel and the elimination of the ceiling fittings. The Sick Bay has been reworked with the addition of new tables and diagnostic apparatus.

Photo by Sackett-Sackett



Susan Sackett is almost as well known to science fiction fans as her boss, Gene Roddenberry. As personal secretary, troublemaker and Girl (Monday thru Friday to the Executive Producer of *Star Trek*, the thirty-four year old Ms. Sackett is kept extremely busy these days with, among other things, typing the routines of her boss's screenplay for the *Star Trek* feature film. Among the other things: answering letters from all over the world (her current boyfriend, she notes, "is a ten year old boy who sent a letter to the *Star Trek* offices at Paramount wanting to marry me." The letter is framed on her wall); taking care of her two dogs, Heidi and Phaser; and fooling as much as she can in the hopes of one day becoming an associate producer. Susan also writes a regular column for *Starlog* magazine (she authored the book *The Letters to Star Trek*) and is working on *The Making of Star Trek II*. Last coast writer Jeff Maynard interviewed Susan in her home in Studio City, Calif., revealing the mystery by which a humble secretary became a screenwriter.

FF: After the success of your first book, *The Letters to Star Trek*, do you have plans to do a sequel?

SACKETT: So far, it's sold, I think, 75,000 copies. That doesn't make it a whopping success.

FF: 75,000 copies sold is not a success?

SACKETT: They ran 190,000 copies, so it's going to be quite a while before they sell all of those.

FF: Are you planning any other book?

SACKETT: Yes, *The Making of Star Trek II*, which will be a sequel to *The Making of Star Trek*. A companion book, really.

FF: Why isn't Steven Whitfield doing it? He wrote the first one.

SACKETT: He's moved to some mountain area of California and plans to sail to Hawaii or something. He just decided to retire. But Gene (Roddenberry) feels that I'm in a good position to write it now.

FF: What will the new book entail?

SACKETT: It will be more than just the making of the movie. Actually, it will be a recap of everything that's gone on with *Star Trek* since it went off the air. I even look into the animated series, which has not really been written about yet.

FF: What else will be in it?

SACKETT: The beginning of fandom and syndication, the lean years in between when there was no *Star Trek*, the upsurge of interest, and finally the remake.

FF: Were you a *Star Trek* fan from the beginning?

SACKETT: Oh yes, from the beginning. I wouldn't classify myself as a *Trekker*, or even a *Trekker*, but I was aware of the show and enjoyed it.

FF: How did you come to work for Gene Roddenberry?

SACKETT: Well, to make a long story short, I was an elementary school teacher for almost four years, but decided to come to Hollywood and break into the entertainment field. I took a quickie course in steno-typing in night school and went to every studio in town. I finally got a job at NBC through a friend of the family. You really have to know someone in

this town. Anyway, after four years there I wound up as National Publicity Director for Disney on Parade, began to write for the NBC Newsletter and took a course at UCLA in Publicity and Commercial Photography. I really began getting into that side of it. I decided to be a publicist at this point. So, I left NBC and went to work for a small production company which packaged syndicated programs. But after about six weeks there I had a really bad automobile accident; whiplash, disability for five months, the whole thing. The company couldn't hold my job for me. So I was broke and unemployed and thought about going back to being a secretary again when a friend of mine at NBC told me that Magel Barrett Roddenberry was looking for someone to work in her mail order business. I said forget it. But after three more weeks I was desperate for money. I was selling everything I owned and finally went on a television game show to try and win some money.

FF: A game show?

SACKETT: I was on *Split Second*. Do you remember that? I won \$875.00.

FF: That must have kept you going for a few weeks?

SACKETT: Yeah, but by that time I figured, the hell with it, I'll call Magel Roddenberry and at least I'll have a job. She told me that her husband Gene may need a secretary. It turned out that his old secretary wanted to return to Warner Brothers, so I went up to the house to see him on his birthday, August 19, 1974. I had an interview, was hired that day and started the next. Everything fell into my lap and I got a raise after one week.

FF: Did you realize at the time what you had fallen into?

SACKETT: I didn't know that he was going to do *Star Trek* again. He was between productions at the time and working on a novel. My first assignment for him was typing novel pages. Within the next six months he began having meetings with Paramount. In March of 75 he got the final OK from Frank Yablens for a *Star Trek* feature

film. We moved to new offices at the Paramount lot and we've been here ever since.

FF: What is Mr. Roddenberry doing now?

SACKETT: Rewriting the film script.

FF: Do you type the scripts?

SACKETT: I've done that occasionally. Gene won't let anybody else see his original pages. He then rewrites it ten times before anybody else sees them. The script is into its third draft and each draft is rewritten four or five times.

FF: He seems to work very hard?

SACKETT: Yes, he's very good about that and very disciplined.

FF: What do you do the rest of the day?

SACKETT: I answer an awful lot of fan mail. We got a letter for Gene yesterday that was addressed to The Great Bird of the Galaxy, Paramount Pictures, Hollywood, California.

FF: And it got here?

SACKETT: It got here. We've gotten things that just said: Gene Roddenberry, Hollywood, California, without any zip or address.

FF: O.K. The key question. What's happening with the movie?

SACKETT: Well, unfortunately, I can't go into too much right now because of the fact that Paramount has not made the official announcement and we were told to curtail our discussions on it. But, there are a few things that I can say. We are doing the movie and the third draft of the script is in. It's very, very exciting, visually as well as in character development.

FF: I have been on the set and seen much of what is being done. The electronics are highly sophisticated.

SACKETT: I would say the most dramatic change would be in the engine room.

FF: What is Gene Roddenberry like to work for?

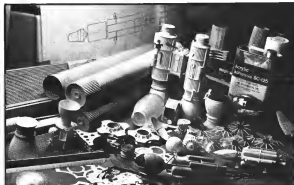
SACKETT: You couldn't ask for a nicer person to work for. Very mellow and relaxed under pressure.

FF: You haven't caught him popping tranquilizers?

SACKETT: No, not him. We're all very mellow here.

MAKING IT

An Interstellar Itinerary of Inexpensive Items You Can Transform into Miniature Models



Shown are about half the parts for the space probe ship in the diagram against the wall. All of them are from simple or cheap components, and simple shapes. We also show some of the tools and gadgets used. Compasses, scales, circle guides, ships curves, hobby knives, ultra-high-speed acrylic cement, stocks of plastic shapes (Plastruc, etc.) and sheets, micro-light bulbs, LED's, pulsecontrols, juice bottles, and even model parts!



This shot (above) is of the landing deck of the probe ship. The Vacuum Reconnaissance Craft is one sub-model that goes in the set. An Atmospheric Analysis Reconnaissance Device goes on the other side—sort of a flying wing configuration. Note the multiplicity of detailed structural members involved. Just a few basic shapes, often repeated. Note also the scale of these little gadgets. 'Mixing' the landing stage (below). This vernier caliper is very handy for checking thicknesses of stock, laying out lines and panels, and accurately doing modeling work.



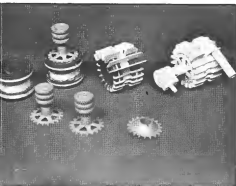
Building spacecraft for filming is a challenge in many ways. You are given a type and size of ship as determined by the shooting script, with certain necessary details. You also have a director and art director to satisfy. And there are certain structural considerations to be met.

If your model is to last throughout the filming of all of the special effects (which may be going on throughout a several month period), it *MUST* have integral strength. It must be assembled well enough to take handling and sitting in hot lights for hours or days. It must have internal support for all of its parts, so they not only stay on the spacecraft but stay in the same positions at all times (unless deliberately moved). If the model is being used in an animation shot, it could be on the stand for a day or two, and the animators will be most displeased if something slowly droops during their work.

It must be precisely constructed. Unless it is to look like a refugee from the wrecker, it must have precisely joining parts and the parts must match when more than one is on the same ship (wings, etc.).

It must be able to work with any special effects that are required in the shooting script. If a tank is to explode during one shot, it must be constructed to explode properly, and probably

Special Effects by CLYDE JONES and VERNE ANDERSON



How to make a turbine pump. First, start with large-scale tank model wheels, body putty, and sheet plastic. Pile up wheels and you get an interesting shape, putty the joints and seams. Cut fins that press-fit onto the edges of the wheels, sand a lot. Add detail. ZAPI A pump.



Tank supports and antenna mounts are just shapes scribed from 20/mil. plastic sheet. The basic lines are scribed with a rigid compass (one with the adjusting wheel and screw assembly) and then the plastic folded to break all the way through. Tolerances were held on these parts (about 30 tank supports, etc.) close enough so that they all slip-fit onto the phenolic core tube.



Large fuel tanks (above) are not really much of a problem, with a little patience and ingenuity. The end bulkheads are cut from the bottoms of salad bowls from cafeteria food machines. The tubes are from flying model rocket bodies. End details are from 1/24th scale tank road wheels. The corrugations around the ends of the tanks are strips of bass wood milled to shape for model train work, available by the section. Striping on the bulkheads is just plastic strip cut to shape or model striping tape. Then, just prime, sand, and paint. The nuclear engines (below) are made of toilet paper rolls covered with that handy bass wood. Add the trimmed-off tops from 20¢ juice containers (far left) for the nozzles, and a heap of plastic circles, and some train parts, some tubing, and tank wheels. The Kreebulator that goes between the engines (bottom, near the right) is laminated sheet plastic and parts from the SEALAB kit.

be replaceable in case of the need for re-takes. If the engines are to contain 'practical' lighting (lighting that actually works), they must be constructed of materials that can take the heat, and provision must be made for mounting the whole thing, getting power to the lights, and probably forcing cool air past the models to keep the ship from spontaneously bursting into flames. Or melting.

It must satisfy the requirements of the script. That may call for the Silver Egg type of craft, all smooth curves and rounds. It may require an atmospheric type of 'flying wing' aerodynamic body. A softly glowing mass of lights may be required, or you may have to come up with a 'Flying Facto-



ry.' The first ones are not too difficult: start with blocks of wood or plastic, and machine it a lot. A file may become your best friend.

The Flying Factory, however, has special problems.

Take the design we are using for this article. It requires a command/support structure at the front of the ship, a landing deck for the VARC-AARD reconnaissance craft, 4 massive out-board fuel tanks, and two honking engines of the fusion type. All of this is being hung on a main

score so it breaks cleanly through.

How to generate a tank hanger: Measure accurately the diameter of your spine tube and fuel tank. Use a micrometer if you can possibly acquire one. (They are available at most good hardware stores for \$15 or less, or at garage sales.) Precision at this stage of the game will save lots of headaches later. First, lightly score the diameter of the spine in the center of the piece you want to use. Then figure the distance you want the tank wall from the spine. Then take half the

very light touch of glue to stay in position.

Bulkheads for the tanks are just circles scored into the concave bottoms of vending-machine salad cups and popped out. Rings for the engines are circles made the same way, and so on.

The engine is made from cardboard tube readily found around the shop or rocketry supply outlet (or bathroom). The ridged material is stock material for railroad car construction and just glued to the outside. Structural elements are plastic strip. The bell nozzles are cut from plastic juice bottles. Detail segments are from tank and train model kits.

Plumbing is simply plastic tube and plastic coated wire from Plastruct. Aluminum may also be used.

Similar techniques are used to make the turbine pumps for the engines. Also, the landing decks and the ancillary equipment for them.

The small Vacuum Reconnaissance Craft (VARC) is a small example of the entire process taken to its conclusion. Modular elements repeated, structural members precisely measured and cut, plumbing inserted carefully, and detail added to give a realistic 'feel' to the whole thing.

If we have to use 'practical' lighting for the engines, they would be crafted from polycarbonate plastics and aluminum machinings for the bell nozzles. Wiring would be strung in the fuel conduits, and air would flow through them also. Given this much mass, the main spine would have been made from polycarbonate plastic or aluminum tube, and connectors would have been built into balance points of the spacecraft for mounting and supplying power and air. The entire design would have changed to accommodate this one effect.

An exploding fuel tank would have been made differently and electrically triggered from a control signal piped in through the spine. Same thing for a blow-up engine.

In essence: modeling for filming has needs beyond those for normal industrial work, or hobby construction. Strength, support, precision, and provision for practical effects are vital. Care is vital to success.

That is one reason the model makers of *Star Wars* and *CE3K* deserve special recognition for their work. Their care and hard work are crucial in creating the cinematic miracles we see on the screen. ■



The Flying Factory nears completion; note the four massive outboard fuel tanks and the two honking engines of the fusion type.

spine that has to support all of this gear.

We have one initial choice: make the model light and easily handled, or solid and massive. In this case it must be portable and adaptable to the hanging-wire method of shooting simple composite shots. Therefore, we make it light.

For a solid, massive model to be shot from a stand or pylon, the spine can be anything from a broomstick (cheap and strong) to aluminum conduit (for electrical runs, etc.) or acrylic or lexan tube, or phenolic. In this case, we choose the phenolic tube for its strength and lightness. The rest of the materials were chosen on the basis of adaptability, and also lack of expense.

To support all the tanks, landing stages, bulkheads and walls, and engines, we are going to need a lot of stringers. These are just uniformly shaped sheets of plastic that slip-fit around the main spine and conform to the shapes of other things. In essence, the desired shape is scribed deeply into the .020 plastic sheet, and the sheet is then flexed along the

diameter of the tank, and add it to the separation distance. Lightly scribe another line that distance out from the spine scribe. You now have two circles precisely concentric. The outer line is where you will find the centers of the fuel tanks. O.K., so far? Take a steel straight-edge and put a line segment through the center of the whole thing and through the outer ring. That gives the center points of two of the tanks. Now, using your geometry from wherever, or a protractor, generate another line segment perpendicular to that line, again through the center, and the outer ring. That gives the center of the other two tanks. Now scribe $\frac{1}{4}$ circles the radius of the tanks into the plastic in toward the center. Make them precise and deep enough to flex-break through. Pop out these segments, and the hole for the spine. Sand lightly. You have a tank support. Now do a few more of them.


Variations of this technique are used for all the little pieces that fit one thing to another. If they are cut precisely enough, they will just slide firmly onto the spine and require a



ARTWORK BY MICHAEL STEIN

STEIN/76


JOHN DYKSTRA




The Master of (Industrial) Light and Magic speaks of *Star Wars* and his latest creation: *Galactica*

PHOTOS FROM GALACTICA © 1978 BY UNIVERSAL STUDIOS INC.

Interview by JAMES BURNS



"Star Wars is going to produce a whole lot of effects oriented, escapist films!" says John Dykstra, the special photographic effects supervisor of the phenomenal science fiction blockbuster *Star Wars*. "I think that *Star Wars* reflects the public's want for entertaining, fantasy-type movies. Whenever you have a show like *Star Wars* or *Close Encounters* or *Silent Running*, where the special effects contributed a major amount to the success of the film, then the effects people become very much like talent, very much like actors. It is their creativity that is providing something that didn't exist before. I think *Star Wars* has provided an opportunity for the production of fantasy movies that the



Darth Vader's Imperial battleship pursues Senator Organa's "diplomatic" space-cruiser over Tatooine (above). Dennis Muren lines up the Batllestar from the back to take a light reading while Don Dow (with mustache) makes an adjustment. John Dykstra (behind the Batllestar) discusses a particular angle shot with Richard Edlund.



JOHN DYKSTRA

public wants. Special effects seem to play an important role in those kind of movies."

Star Wars showcases John Dykstra's first sensational attempt to organize the special effects of an entire feature-length film. Sitting at his office in *Industrial, Light and Magic* (the Van Nuys, California effects factory where *Star Wars*' technical work was created), John anxiously anticipates the coming months, when ABC-TV will unveil his latest project, *Galactica*.

"It's a very, very action packed adventure show," says John. "The basic series plot is like a *Wagon Train* situation. A group of people are driven out of their home galaxy by aliens who attack and decimate the system's six planets. All the humanoids band together in a sort of rag tag fleet to escape the complete destruction of their race by the aliens."

"They head for a mythological place called Earth. They don't go there, but that's where they're headed. They could be related to us. There's an Egyptian influence in the architecture of the planet that they come from; that kind of tie-in. But we really don't go into it as a *Chariots of the Gods* type thing. I don't know how heavily this theme will be dealt with. *Galactica* is more of an action adventure series than a philosophical thing. But in the back of their minds it's always their goal to reach this mytho-

logical Earth—the sister planet.

"Right now, *Galactica* is a working title. Due to its similarity to too many other titles, there's a good chance *Galactica* will be named something else before it airs."

Galactica will initially be televised as a mini-series. Dykstra is co-producing the show with Glen Larson (*It Takes a Thief*, *Switch*), and Leslie Stevens (*The Outer Limits*). All special effects will be supervised by John at *Industrial, Light and Magic*.

30 year old John Dykstra grew up in Long Beach, California where his youth was spent "loosefooted," riding motorcycles and surfing. His lean, long-haired, bearded image still personifies 1960's California—relaxed determination.

Dykstra originally studied industrial design, and had little interest in science fiction and filmmaking. Then his college friends Jamie Shourt and Wayne Smith, who were already into effects work, introduced John to Doug Trumbull (2001, *Close Encounters*).

Doug gave Dykstra his first film jobs almost seven years ago, working on such projects as *The Andromeda Strain*, *Silent Running*, and various commercials. John proceeded to work on *Voyage to the Outer Planets* for Graphic Films, an aircraft simulation presentation for an amusement park, and similar projects.

Based on his impressive track re-

cord, Dykstra was hired to head *Star Wars*' special effects department in June 1975 by the film's producer and director, Gary Kurtz and George Lucas. John realized that designing and engineering *Star Wars*' special effects work would be no easy task. Each special effects shot in *Star Wars* combined several elements—spaceships, animated overlays, miniatures—photographed separately and then printed together. *Star Wars* finally utilized 3838 individual elements in its 365 miniature and photographic effects shots.

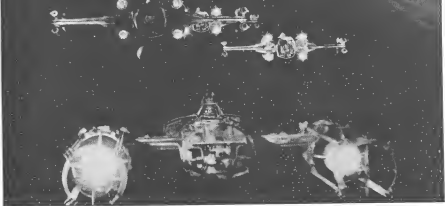
"My first meetings," says Dykstra, "with Gary and George to discuss *Star Wars*' special effects were very loose and general. With the quantity of material that was in the film, it would be difficult to go through it specifically. We just talked about some very general ideas—about the way things should look and how things should be done."

From the first day John was assigned to *Star Wars*, he realized that in order to produce the film's numerous effects, it would be necessary to construct a complete in-house effects studio—"The Industrial Light and Magic Corporation."

"I began assembling a team of my own basic people," remembers Dykstra. They included: Richard Edlund (director of effects photography), Robbie Blalock (composite optical photography), Joe Johnston (effects illustration and design), Ralph McQuarrie (planet and satellite artist), Colin Cantwell (additional spacecraft design), Grant McCune (chief model maker), Adam Beckett (animation and rotoscope design), Mary Lind (film control coordinator), Al Miller (electronic designer), Don Trumbull (Doug's father), Richard Alexander and Bill Shourt (camera and mechanical design), and Bob Shepard (production manager).

"This group of people got together and walked into this building in Van Nuys, California—14,000 square feet of empty building, and began constructing a special effects studio. The first thing we did was get two groups of people working together concurrently—one on the construction and development of the miniatures and the other on the construction and development of the miniature photographic equipment."

With sometimes over one hundred people working under him, Dykstra's biggest problem became organization. "What made these people work



was that they talked to each other. Everybody know enough about the other person's field to be able to talk articulately with the next guy."

George Lucas' script required that *Star Wars* present space sequences in which the camera pans, tilts, and offers multiple angles. Since traditional special effects procedures couldn't do this, new cameras and systems had to be created.

"We took effects methods that have been used for years," explains John, "as individual jobs and combined them into one system, so that we have the ability to make accelerations and decelerations in motion, without having to set one move up and another on separate passes. We've taken the best of the techniques that existed when I started *Star Wars*, sophisticated those as much as we could, and then developed a work horse system to do those."

To film an X-wing fighter swooping and soaring, the miniature ship would remain stationary, attached to a plas-

tic pylon, while the camera was manipulated. If two spaceships were to be in one scene, they usually had to be shot separately, positioning the camera differently, and then adding the two films together to create a single action sequence.

To shoot scenes where the camera

The basic plot of *Galactica* is like a Wagon Train situation. Aliens drive a group of people out of their home galaxy and they go looking for the mythological sister planet . . . Earth.

would change angles while still filming the immobile miniatures, the camera had to exactly "remember" the elements of its own motion. This way, when the scenes would be composited, the shifting camera angles would be matched.

Dykstra designed a computer-like system utilizing microprocessors that fed programmed instructions to a group of electric motors, maneuver-

ing the camera through a series of difficult motions while still remembering every previous movement it had made. The entire camera system was dubbed the "Dykstraflex."

"Al Miller and I designed the basic concept for the Dykstraflex over a bottle of wine on the floor of my house in Marina Del Rey," John fondly recalls. "A lot of our innovations came together that way, because the people at *IL&M* are a very personable group. We talked instead of sending memos. Initially, we got a lot of flack from people about the way we worked, because I didn't want all of the things that to me smack of organization for organization's sake, and not organization for efficiency's sake. I got into some trouble there."

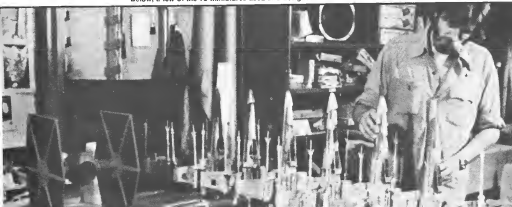
The Dykstraflex enabled the effects artists to limit moving miniatures, an important advantage.

"When you begin to move miniatures," explains John, "you end up with shakes and lighting problems.

(Continued on page 50)

The Rebel fighters (seen from behind) fly to do battle with the Deathstar (above).

Below, a few of the 75 miniatures used and designed for *Star Wars*.





THE STAR WARS ALIEN LANGUAGES TRANSLATED

The Star Wars galaxy is filled with countless worlds, many of them inhabited by forms of alien life. On the planet Tatooine we saw not only the natives of this world, but many transient aliens that frequented the space port of Mos Eisley. A large majority of the 'human' inhabitants seemed to speak a language akin to ours, but there are also a unique assortment of alien languages that are of interest.

NATIVE INHABITANTS

There were two native inhabitants of Tatooine. *Jawas*, small rodent-like creatures, and *Tusken Raiders* (Sandpeople), marginally human creatures.

JAWAS

Their speech was low guttural croaks and scrambled analogues of human speech (when Jawas wanted they could be understood). In a sales pitch to Owen Lars . . .

WRITTEN

zll wll

SPOKEN

(Can not be represented as spoken on paper.)

LITERAL TRANSLATION

Gentlemen pledge insure (my), about insides (who have) (working) well. Represent as I their worth.

FREE TRANSLATION

Gentlemen, I guarantee that they (droids) are in good working order and of worth as I represent them.

Their spoken language is similar to Donald Duck pronouncing Cockney English, while their written is a combination of symbols, like Gregg Shorthand.

TUSKEN RAIDERS (Sandpeople)

Little is known of them since they avoid human contact (as it usually ends in violence). Knowledge of their language is therefore sketchy. It appears that they speak with a vocabulary of words made up mostly of consonants. The following conversation was held to decide whether or not to attack Luke Skywalker . . .

SPOKEN

(first sandperson) Nw Nw

(second sandperson) Uhn Uhn

(first sandperson) arn arn

TRANSLATION

No! No!

Yes! Yes!

dere not! dere not!

The first Tusken Raider appeared to have some control over the second. He wishes to attack at closer quarters, where there could be no possibility of error.

BOCCE, AN UNNAMED LANGUAGE, AND BINARY

Bocca is the name of a language without substance, for we had no sample presented to us. In the reverse of Bocca, we have a language without a name spoken by a bug-eyed, gold humanoid robot. Is this perhaps the evasive 'bocce'? The third is a machine language and we will only mention it briefly (a future issue will explain the language of computers and robots). Here we are mainly concerned with vocal language based on the speech patterns of a biological being.

BOCCE

Bocce is a language spoken on Tatooine; by whom or for what purpose is not precisely known. There is a possibility that it is somehow important to the operation of a moisture farm. However, any importance seems to be negligible since for many years Owen Lars ran his farm successfully without a 'Bocca' translator. It is also quite unlikely that 'Bocca' is the name of the language spoken by either the Jawas or Tusken Raiders, since Mr. Lars was able to converse with the Jawas, and no communication with Tusken Raiders seems necessary nor desirable. It is possible that a third, unknown native of the planet exists, speaking Bocca. Or perhaps the common bartering language of the planet is Bocce. Knowledge of it would help to make life less of a strain to a pioneer of the land, while not being absolutely necessary at first to begin a homestead. On a planet where there is such a vast cross section of alien races sharing a relatively small inhabitable area, the necessity for such a universal language would be handy.

UNNAMED LANGUAGE

SPOKEN

Libbt habit to, Ya ta whn ta wa

TRANSLATION

Welcome to the habitat, your turn has come.

The above was spoken by the gold, bug-eyed robot in greeting to C3PO as he was brought aboard the land crawler. 'Bocca'?

BINARY

Owen Lars asked the droid, C3PO, if he understood the binary language of independently programmable moisture vaporators. C3PO answered that he knew the language of binary load lifters, which was nearly the same thing.

Alphabet	Decimal	Binary
a	1	1
b	2	10
c	3	11
d	4	100
e	5	101
f	6	110
g	7	111
h	8	1000
i	9	1001
j	10	1010



This is a programmers' language for controlling machine action. (A more comprehensive study of the language of synnoetics (cybernetics) will be discussed in a future issue.)

WOOKIE

The Wookiee we were introduced to was named Chewbacca—a large anthropoid with a quasi-monkey face, blue eyes, and the coloring of a Yorkshire Terrier. Perhaps this is some indication of the speech they make. . . a combination of various grunts and growls. The Wookiee does not have a language of words so much as of thought patterns. He is capable of understanding human speech and interjecting his viewpoint by guttural quarreling, hooting, howling, grunting, "Grunks" and "Kronks." And if all else fails, his size and strength are enough to insure that he will not be misinterpreted.

LARGE SQUARISH MONSTROSITY WITH MULTIPLE EYES

In the cantina a large squarish creature resembling a walrus without tusks and having multiple eyes (a multiple of one times two) accosted Luke verbally before flinging him across the room.

LANGUAGE Negola dewaghi wooldugger . . .

TRANSLATION Your kind stinks like —

LANGUAGE Katura veshtat! Shadraak!

TRANSLATION Don't turn your back on me! You #"%@*!

LANGUAGE Mandysh Makora.

TRANSLATION Prepare to die.

GREEDO'S LANGUAGE

A 'collector' and hitman for Jabba the Hut, Greedo met his match in Han Solo. Greedo spoke in his language and was understood with the aid of an electronic translator.

LANGUAGE GÖÖ TÄ DÖ DÄ SÖLO?

LITERAL AND

FREE TRANSLATION Going somewhere Solo?

LANGUAGE SÖ VE-TA-LÄ. VERE CRT TE NACHT VE JACTÄ. JABBA WÄ NIN CHEE GO YJA WETCHING TRI
WHYNIN E OH SKÄ. CHÄS KIN WÄ CHU-SKO. he he he he

L & F TR. It's too late, You should have paid him when you had the chance. Jabba's put a price on your head so large every bounty hunter in the Galaxy will be looking for you.

LANGUAGE ENZYÄ KULTÄ EN ET UN KOLTÄ

L & F TR. I'm lucky I found you first.

LANGUAGE TCHI E IKNITE. HO KÖ RU YÄ PULYET YÄ RULYEN PÄ GET GÄ GUSH SHU KU VAYREN YÄ THREE
PE.

L & F TR. If you give it to me I might forget I found you. Jabba's through with you; he has no use for smugglers who dump their cargo at the first sign of an Imperial cruiser.

LANGUAGE TÖK JABBA. SÖ KÄ GÖÖ PÄ EN AT A-AWN-AWN-AW

L & F TR. You can tell that to Jabba. He may only take your ship.

LANGUAGE ÖKÄ YÖU MA CHAS PÖ KÖ PTÜ TÄ KRAS DÄT I KROW YÄ ÖKÄ

TRANSLATION That's the idea. I've been looking forward to this for a long time.

Most of the *Star Wars* alien dialogue is a clever utilization of electronic equipment. Among the various types probably used were a Speech Clipper (which cuts peak amplitude points off), a Speech Compressor (which cuts down all sound to equal amplitude), and a Digital Voice Controller (in which the voice is enclohered and transmitted as a string of impulses, and which is undecipherable without the original code). Another piece of equipment undoubtedly used to some degree was a Modulation Transducer. It is a device most often used in teaching the deaf to 'hear' and is attached to the throat for that use, picking up the impulses of sound in speech that can be felt by a similar device attached to the throat of a deaf person.

JOHN DYKSTRA

(Continued from page 47)

Remember, we don't have a sun to work with. We put a single spot lamp on the model and it's got to be spotted down to give us a parallel shadow effect. If you move the model out of your key lights, you end up going into multiple shadows."

Dykstra also utilized motors to manipulate *Star Wars*' miniatures.

"When we wanted the ship to roll over, while it's flying by the camera, then you have to make the ship roll to do that. When you have ships that you are shooting concurrently with one another in order to cut down the number of composites, often we put one of the ships on a track that moved laterally, or sideways, perpendicular to the axis of camera motion to give some independent motion between the two ships. In the scene where the pirate ship is backing out of the door of the docking bay, where it did the flip-over, the pirate ship actually made that movement."

To combine miniature footage with coordinating backgrounds (additional spaceships, stars, planets, etc.), Robbie Blalock and Richard Edlund

developed a vastly improved blue screen system. The standard blue screen system involves shooting one object against a blue background. Your desired background is filmed and printed through a red filter. After several negative reversals of each piece of film, the final negative and prints are run through an optical printer and you finally have your completed effect.

Industrial, Light and Magic innovated day-light corrected, fluorescent tubes to "facilitate movement of the screen and to optimize the screen's efficiency." The procedure was adapted from AC to DC to eliminate potential flicker problems with "real time or high speed photography."

Star Wars also improved Rotoscoping processes. Rotoscoping is when "a film is projected under a light box. Artists trace over this frame by frame, sometimes adding in new material." The final effect is startlingly realistic.

To help choreograph *Star Wars*' gun port battle and climactic dog fight sequences, George Lucas and Gary Kurtz compiled a 16mm dupe featuring battle scenes from various war films. When Dykstra shot those scenes, he had to revise their ideas.

"We departed from that black and white film storyboard sequence in

many, many areas. As innovative and intelligent a way to approach the scenes as the dupe was, one problem was that the ships on the storyboard were black against a white background. In many cases, George wanted the size of the ship different than what he had in his storyboard. That made it impossible to make the shot the length that you saw on the dupe."

Lucas wanted to be heavily involved with *Star Wars*' special effects. But communicating with Dykstra (who was in Los Angeles doing effects), while George was in Europe shooting live action footage, proved nearly impossible.

"I think that George was so involved with what he was doing in Europe that it was very difficult for him to communicate effects information," says John. "In fact, we basically ran on my concept of what we were going to do for an awful long time, before George had any hand in it at all. We were in contact via the telephone. But I didn't talk to George so much as I talked with Gary Kurtz, and then it was usually just progress reports."

Lucas' forced silence helped heighten the growing tension between himself and John Dykstra.

"George and I are not what you call the best of friends," explains Dykstra. "We are two different kinds of people. I like George Lucas. I don't know whether he likes me or not. I assume he can tolerate me. He did for two years. I don't think that our conflict was based on anything other than the fact that we have different interests as people. We had a common interest in the movie."

"George feels that he is capable of doing the technical end of the special effects more effectively than I. Perhaps that's why we didn't see eye to eye on so much of the stuff, because he wasn't in a position to come and be there, to actively have a hand in it and say, 'Let's use this camera to shoot this shot.' I think that if he had come and done that, perhaps he would have had a little more respect for what I did. If he had come and done that, he would have known a lot more about special effects. Therefore, I probably would have paid a lot more attention to his suggestions."

Beyond *Star Wars*, John Dykstra envisions the day when special effects artists will get marquee billing with the likes of Carrie Fisher and Alec Guinness.

"My having access to facilities and a team of people who are capable of



From left to right, John Dykstra, Richard Edlund, Rose Duignan, George Lucas, and Joe Johnston discuss the layout for a scene.

doing the kind of special effects you saw in *Star Wars* and *Close Encounters*, becomes something that the people who are making movies can bank on. I think it's a ways yet, but not too far off, before we (special effects people), get poster billing with stars. Personally, I think it's reasonable that that happens. It's not just a glory hog on my part. I think that a picture that relies heavily on special effects has got to give credit to the people who did the special effects because they may create as much as 25 to 50% of what you see on the screen."

John's current exuberance is keyed on his pet project, *Galactica*.

"The show's original title was *Star World*, but I think that was a little too close. *Galactica* parallels *Star Wars* only in the sense that we have a very active special effects format (and many of *Star Wars*' production people are working on the show). There are battles in space of a similar nature to *Star Wars*, but the storyline is very different. The spaceships are different, the characters and the way they are developed are different and the format—the medium the characters are set into—is totally different.

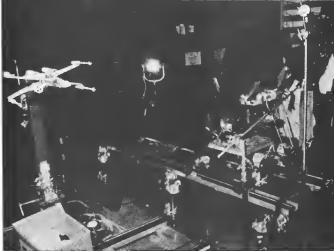
"A good portion of *Galactica* is done in regard to effects. We've just started shooting live action stuff and it looks really good. The cast is not totally set yet, but we have signed Lorne (Bonanza) Greene as one of the stars."

As *Galactica*'s co-producer, John can make sure that the series' stories are as good as its effects, a quality he won't sacrifice.

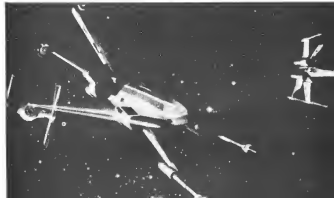
"I think that people go to see movies or watch TV because they like the stories. I am not strictly an effects man. Glen Larson wrote *Galactica*'s script and there was a little collaboration on my part. Leslie Stevens wrote the second two hours.

"I'm doing production now and I plan in the near future, following *Galactica*, to try to get a project I'd like to direct. That means that I'm going to integrate as much as I can the effects and the story and the character development. I'm interested in making total movies, not just effects movies. I think that there is a big, big mistake being made by a lot of people who think that flashy effects are going to save a bad story.

"I don't think I'm going to be tied to a space genre, either. Special effects is not just tied to making spaceships and alien civilizations. Special effects are also capable of providing real fan-



An X-Wing fighter is propped up while special effects men feed the shot through the Dykstraflex camera and into a computer. Chief model maker Grant McCune masks an X-Wing fighter before a scene. A finished scene shows two fighters against a star field background.



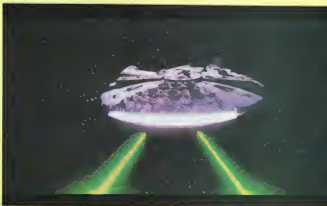
tasy situations in contemporary settings. You've seen this done. A classic example is *Topper*. In *Close Encounters*, the spaceships are set into a contemporary situation and they are handled very much like cars would be handled.

"I am going to personally develop a system allowing you to do live action photography and then at a later date go back and put the miniature photography in, in a totally separate time base, allowing you to eliminate that problem of depth of field and lighting, and still have matched moves."

This system would enable Dykstra to film such science fiction epics as *The Martian Chronicles* and *Dune*.

"It will be quite a while before I can do this process, though," John says. "I want to do *Galactica* first, because at this point, nothing other than the series is in my brain."

Summarizing the plight of Hollywood's special effects artists, John wanted to make this his last comment: "I think that people have been run into the ground for years, as far as this industry is concerned, technicians particularly—'work them eighteen hours a day and burn them out.' Because special effects people were



The design of the *Millennium Falcon* (above) is also similar to that of the *Manta-ray* like *Cylon* (below) from *Galactica*, even though the latter has exposed access hatches on top and solar energy panels.





The Viper is one of the space ships that will be used in *Galactica*. The rocket-jet ports, stabilizers and control center of the sleek ship make it look (as did the X-Wing of *Star Wars* in the inset) as if it is capable of fighting both in space and within planetary atmospheres.

looked at as technicians, that approach was taken with them in many cases.

"Special effects people are not technicians, they are artists, and deserving of the same kind of deference that is given to the people in 'star'

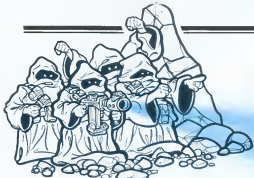
roles—actors. They don't work actors too hard; they get their trailers and stuff—they're creative people. I'm not talking about me, I'm talking about me and my people. I'm not asking for the velvet glove or a fancy doo-dah situation. I'm just talking about some

respect and some fair treatment.

"I want to make sure that it's understood that I'm not at all in any way putting George Lucas down and saying that *Star Wars* was a bad situation. Working on *Star Wars* was wonderful!"

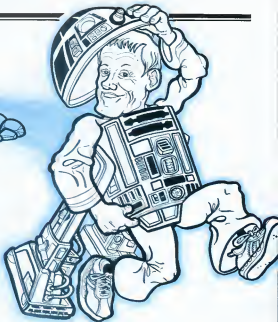
Special effects artist Richard Edlund: photographs the main ship from *Galactica*—the *Battlestar*.





A SHORT CONVERSATION WITH KENNY BAKER

"It wasn't until I bought a comic book about *Star Wars* for my kids to read that I really understood what the film was about."



*Kenny Baker, the 3'9" midget who played R2D2 in *Star Wars*, has a lot of big things going for him. Born in Birmingham, England on August 24, 1934, Baker is currently finding himself to be one of America's most popular new heroes, the mechanical R2D2. Baker, when not on an intergalactic mission, is an accomplished cabaret performer in England. He was the subject of recent news stories picturing him as somewhat disheartened because of the lack of professional recognition he received from *Star Wars*. Although the character "Artoo Detoo" was one of the most popular in the film, Baker's face was never seen due to his elaborate robot costume. Contributing writer Jim Sulski spoke to Baker while he was in the United States promoting Olympia Beer ("Kenny's the best thing to come out of a can since Olympia," said one beer distributor). The first question, was of course, how he got into this crazy business in the first place.*

FF: How did you first get your start in show business?

KB: It started when I left school. I met somebody on the street in London who was already in a show, a midget revue, and he said to me, "Are you working?" I told him no. So he said, "Do you want to be in my show?" That's how it all started.

FF: It was as easy as that?

KB: Well, it was just about that easy. There were already 21 midgets in the show.

FF: How did you eventually wind up in *Star Wars*?

KB: I went from the revue into other shows, and then into pantomime in England. Then I went into cabaret with a partner. From the cabaret act agents in England knew me pretty well. I've been in the business about 27 years. Finally somebody got wind



Kenny Baker speaks bluntly about his role in *Star Wars*, informing us that he will play R2D2 and another character in *Star Wars II*.

of this film coming up called *Star Wars* and they wanted a little guy for inside a robot. I was the first guy that came to mind because I was pretty well known. I auditioned and got the part.

FF: Was it also true that you took the part because it was being filmed close to where you live in England?

KB: Yes, that's true. I live about 6 miles from the actual studios where they did the filming in London. I'm a cabaret act now, a double act, and we call ourselves the 'Mini-Tones.' We've been working around London and the southeast of England for the last five years.

So I was very busy with the cabaret at the time the film came up, but I thought, well, it's so close to where I live and work anyway, so why not do them both.

I was very busy with the cabaret at the time the film came up, but I thought, well, it's so close to where I live and work anyway, so why not do them both. So I was doing the film in the daytime and the cabaret in the evening.

FF: What did you first think about *Star Wars*?

KB: To be honest with you, I didn't know what it was all about. I could not get hold of the story at all, because of the words, like *See Threepio* and *Artoo Detoo* that were in it. There were all these weird and wonderful names coming out of it and I couldn't really understand the whole thing at all. It wasn't until I bought a comic book about *Star Wars* for my kids to read that I really understood what the film was about. And then I actually saw the film.

FF: What was your first reaction to the sets?

KB: Oh, it was fantastic. The sets took up nine sound stages. That is pretty big for a film in England. We filmed for six months in England, which included two weeks in Tunisia.

FF: Were all the problems with the mechanical R2D2, or were there also problems with the one you were in?

KB: Mostly the mechanical R2s. They went haywire a lot. They were remote-controlled, and the walkie-talkies used between the director and the camera crews interfered with the wave-lengths of the controls. Once, while I was in my R2 unit, a remote-controlled R2 unit crashed into me.

FF: Did you have any problems with your R2D2 unit at all?

KB: Only in getting it to move. It was heavy, and I really had to put some effort into getting the whole thing to move.

FF: What did you think about the

possibility of Academy Award nominations for best supporting actors for R2D2 and C3PO?

KB: Personally, I didn't do any brilliant acting. It was just a robot. If anyone gets an academy award it should be the special effects people. *Star Wars* was like cowboys and Indians in outer space. It was a special effects film.

FF: Do you ever get frustrated from not getting a lot of personal recognition from *Star Wars*?

KB: Yes, a little bit. But I'm lucky. I don't have to do just films I'm into cabaret and other things. I'm not limited, whereas Anthony Daniels doesn't have a cabaret act. He's an actor, and, as everyone knows, acting is a tight business to be in. Tony has

"George Lucas wanted C3PO to have a Bronx accent, but Tony Daniels said no."

been to the States a few times and has had a lot of publicity since the film, but he's inside the robot and is just slightly frustrated about it. It's just that he's not getting any breaks as Anthony Daniels at the moment.

FF: Speaking of Anthony Daniels, did you enjoy working with him?

KB: Oh, very much so. Apparently George Lucas wanted C3PO to originally have a Bronx accent, but Tony Daniels said no. It should be frightfully, frightfully English, like a butler. Eventually everyone agreed with Tony. And George Lucas also eventually agreed and had him do it on that basis. Daniels has got a very good voice and he's had plenty of training as a legitimate actor.

FF: Are you planning to be in the

sequel?

KB: Well, I'm hoping to. I saw Gary Kurtz in London in February, at a luncheon with Alec Guinness. He came over to me and said, "Kenny, I'm going to give you a bonus for Christmas." Which is great you know.

FF: Do you have any idea what the sequel will be about?

KB: Well, Kurtz said I was going to be R2D2 and another character in the middle of the next film. But I don't know what it is, he didn't tell me. Kurtz also found a part for my partner Jack, which was awfully nice of him. But I don't know what the sequel is about, or what it's going to be called or practically anything about it at all. Kurtz did tell me that it's going to be filmed in Finland for snow scenes and Africa for jungle scenes, but story-wise, I haven't a clue.

FF: Have you had many offers for film roles since you've played R2D2?

KB: No, not really. I've done one film since, in England about the Wombles. Wombles are little fairy creatures out of kiddie stories. It's called *Wombles Free*. But I haven't had any offers. It's the robot you see, not me. It's not Kenny Baker as an actor, it's R2D2 as a robot that everybody knows about. But I'm really not into acting. I'm into cabaret, and since *Star Wars*, my partner, who was a Jawa in the film, and I, have had a lot more exposure.

FF: Then at least your cabaret act has been more successful since the film?

KB: Through *Star Wars* we've just had a major breakthrough with our act in England. We've been signed to do a television show and this is great for us. I'm really excited about it.

FF: Then you are enjoying the success of *Star Wars*?

KB: Oh, definitely. I hope it goes on forever. ■



Kenny Baker in Chicago promotes Olympe Gold beer in a mock robot costume.

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THE WEAPONS OF STAR WARS

Weaponry by
CLYDE JONES
and **JOHN PENN**

LOOK OUT! Here they come!" Two men tense in their weapons' control pits in the souped-up freighter. Evil, geometrical constructs whip into sight, firing destructive blasts of light. Luke and Han return the fire, madly swiveling their control chairs as their pom-pom lasers twitch in synchronus, blasting forth their carmine rays of death. Multiple barrels recoil with the intensity of the fire.

On board the Death Star, turbo-laser batteries also belch fire, and massive barrels rock to monstrous forces being unleashed. Concussions fill the corridors as stormtroopers pursue prisoners through the heart of the station.

And George Lucas sits back enjoying it all.

Lucas and I once discussed props and weapons for *Star Wars*, about a year before it was released, and he explained a bit about his philosophy. In order to get the proper visual pace

for the film, he wanted movement, brilliance, and action. He also wanted the actors all to look like they were handling live weapons that actually did something. So he made most of his prop weapons from real ones.

Watch Han blasting away with his modified Mauser C-95 9mm automatic; the bright flash of light and puff of smoke come from real (blank) ammo. The stormtroopers' weapons actually

fired a few rounds per loading of 9mm blank ammo from the extremely short (3 round) magazines of their British Sterling submachine guns. The stormtroopers attacking our heroes in the Mos Eisley landing pit are using WWI and WWII machine guns, Lewis and Vickers types, also firing a blank or two. And Princess Leia takes out her stormtrooper with what seems to be a Stoeger Luger .22 cal. target model blaster, which a Princess/Senator might actually have around for target practice. The Jawas use a shortened Lee Enfield .303 rifle fitted with a surplus British grenade cup to 'stun' little R2D2.

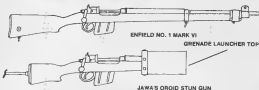
And all the weapons look so *right!* Maybe real laser cannon don't recoil as they fire. Maybe anti-spacecraft lasers won't fire through windows at enemies. Perhaps plasma bolts won't ricochet around the inside of a garbage compactor. WHO CARES? In the galaxy of long ago they do.

MODIFICATION SCHEMATICS FROM A GALAXY FAR, FAR AWAY

THE JAWAS' DROID STUN GUN



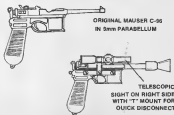
The Jawas' droid stun gun was converted from the British Enfield No. 1 Mark VI. Life was done except cutting down the stock and barrel and adding a canister-like grenade launcher.



HAN SOLO'S BLASTER



Han Solo's blaster apparently began life as a Model C-96 Mauser pistol of the type favored by Winston Churchill. A very effective weapon, it achieves piratical elegance with a muzzle break/flash suppressor at the end of an enhanced barrel, and a pistol scope mounted on the right side of the weapon on a quick-dismount mount.



TUSKAN GAFFE STICK



The Tuskan Raider gaffe stick began life as a Lake pipe, lused with a foil assembly of a small missile and its misplaced nose cone. Add a small fire and a very large gum-stimulator (what a toothbrush!) and you have the tenting weapon of the Sandpeople.



PRINCESS LEIA'S BLASTER

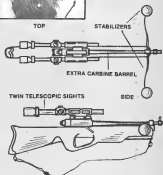


STOECKER LUGER
.22 TARGET PISTOL
WITH MUZZLE BREAK

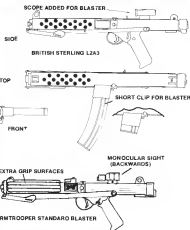
Princess Leia's weapon seems to be a target model of the .22 Stoecker Luger. This weapon is complete with muzzle break and compensator, barrel weights for steadiness and large target grips. A very effective 20th century weapon.



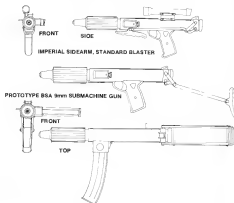
CHEWBACCA'S WEAPON



Wookie power is enforced with this 'interesting' device from Wookie. Basically a cross bow (steel, recurved), it has sprouted not only a carbine action and iron sights, but also a set of telescopic sights on top for stereo-ranging of distant targets. The spheres on the bow arms, of course, are to stabilize the weapon in the swamps of the Wookie's home world.



STORMTROOPER WEAPONS



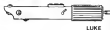
Stormtroopers blaze away with British Sterling L2A3 SMG's equipped with top-mounted monocular sights and hand guards around the normally perforated barrel shroud. A specially made 3-round magazine protrudes from the mag well, which has 'things' on top. The shoulder brace is simply folded forward.

Another Imperial standard sidearm is modified from the BSA SMG which has lost its shoulder stock assembly entirely, as well as its magazine well, and acquired a Weaver Buick's point sight (apparently) on top for snap-shooting.



THE LIGHT SABRES

ORIGINAL
McGUIARRIE DESIGN



LUKE



Obi-Wan



BELT LOOP HANGERS

Top: The McGuarrrie/Lucas original design follows the description from the book: stubby handgrip with a palm-sized disc, and inset jewel-like devices. Originally a one-handed dueling weapon.

Luke's light saber, actually an augmented GRAFLEX flash gun nicely modified and beautifully presented. It's origins are unimportant. In Star Wars it achieves a symbolic reality: silver for the gleam of purity in Luke's heart.

Obi-Wan's saber is silver and black in about equal proportions, showing a balance in the FORCE: creation and destruction in even karmic balance. The styling is elegant and a bit baroque, fitting the aged Jedi warrior.

Darth Vader's weapon glistens in ebony splendor, with a few remaining touches of silver (is there hope yet for the Dark Lord?). An ominous weapon for an ominous warrior.



Brought together by the film's key designer, Joe Johnston, **THE STAR WARS SKETCHBOOK** offers 65 drawings including the Imperial Star Destroyer, the Rebel Blockade Runner, the Death Star, the Millennium Falcon, the X-Wing Fighter, and much, much more!

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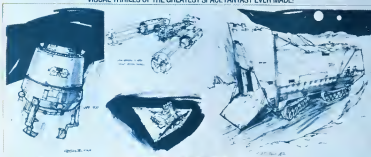
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ELLISON SPEAKS

Harlan Ellison recently gave a lecture at the University of Notre Dame and confounded the attending scholars and priests by telling them he was "really 'not' like his evil 'lousy wonder' reputation, and that he 'would not say words like 1954, or '598'." The audience roared. At right, Ellison, bottle in hand, is escorted by South Bend, Indiana Star Base 18 member Barb Taylor.

HYNEK AND FRIENDS



Fantastic Films magazine Astronomical Advisor Dr. J. Allen Hynek (above) poses with Bob Corrier (Darth Vader) and Pat Huey (Chewbacca), also from Star Base 18. Dr. Hynek was giving a speech at the South Bend extension of Indiana University.

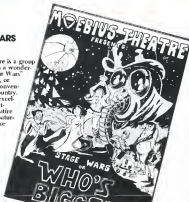
A NEW SPFX MAGAZINE

SPFX is a new, slick publication on Science Fiction Special Effects. The first issue is devoted to the 25th year tribute to "War of the Worlds," and the next issue is a total package on "The Day The Earth Stood Still." Published by Jay Duncan ("Fantascene") and Ted Bobas, it is a lively and informative magazine with many color photos. You may order this or future issues by sending \$4.00 per issue to Ted Bobas, 70 West Columbia Ave., Palisades Park, New Jersey, 07650. (The title was inadvertently left off the first issue, shown below).



STAGE WARS

The Mobius Theatre is a group of fans who put on a wonderful take-off on "Star Wars" called "Stage Wars, or Who's Bigger?" at conventions around the country. The costumes are excellent, the playovers outstanding, and the satire does not close on Saturday night. Watch for them!



HANNIBAL FANS

A local group of fans in Hannibal, Mo., sent us a photo of "Star Wars" costumes. All their costumes are hand-made and carefully detailed. Greg Kelso is Darth Vader, and he also made the C-3PO and Tusken Raider costumes, as well as built the little BB-8. Princess Leia is portrayed by Julie Lee.



GOZILLA IS BACK



Spectacular aerial and space battles highlight Toho Productions' "The War in Space" (right). Director Jun Fukuda and screenwriter Ryuzo Nakanishi pull out all the stops in this one with giant, Oriental looking spaceships, spherical rockets called Hell Fighters, and a climactic air battle over Venus. Special effects were created by Teruyoshi Nakano. Above are scenes from "Godzilla vs. Monster Island," a 1971 Toho film that will be released in the U.S. this summer. It seems that Godzilla and Anguirus awoken from hibernation on Monster Island to defend Tokyo against an attack by Gheerah and Gigan. Where are you now, Raymond Burr?

THE WAR IN SPACE



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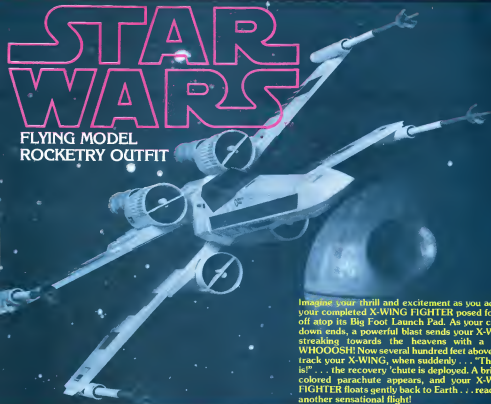


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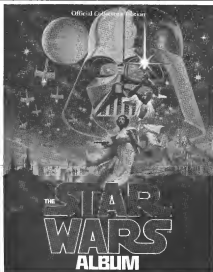
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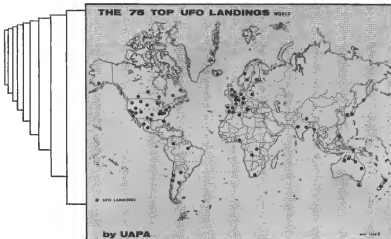
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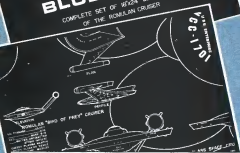
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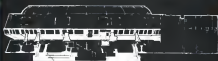
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1. The robot contest is open to all residents of the United States and Canada, regardless of age.
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3. All entries must be postmarked by September 1, 1978. Winner will be notified by mail.
4. All taxes will be paid by Fantastic Films magazine.
5. Employees of Fantastic Films magazine and Blake Publishing Corp., their fam-

lies and friends, are ineligible to participate.

6. You may enter as many times as you wish, but ALL ENTRIES MUST BE SUBMITTED ON THE OFFICIAL ENTRY BLANK ONLY. No facsimiles, please.

7. The entries will be judged on a 100 point scoring system as follows:

40%—originality

30%—sincerity

30%—imagination

The decision of the judges will be final.

8. VOID WHERE PROHIBITED BY LAW.